FEEDSTUFFS

★ A WEEKLY NEWSPAPER ★

FOR THE FEED MANUFACTURER, JOBBER, BROKER and DEALER

Volume 26—Number 45 | NOVEMBER 6, 1954 | 1 Year $4, 2 Years $7

In Two Sections—Section One

INDUSTRY PRAISED—Ezra Taft Benson (left above), secretary of agriculture, praised the feed industry for its assistance in distribution of USDA grain relief to drouth areas when he was in Kansas City Oct. 28. Discussing the drouth program with the secretary are Max Shields, Albers Milling Co., Kansas City, president of the Midwest Feed Manufacturers Assn., and Oscar Straube, Pay Way Feed Mills, Kansas City. (See story on page 6.)

Price Stability Indicated, Cornell Conference Told

By GEORGE W. POTTS and PAUL L. DITTEMORE
Feedstuffs Editorial Staff

BUFFALO — A slight increase in meat, milk and egg production, an adequate grain supply, high-protein feed availability about the same and probably no major changes in feed prices in the 1954-55 season was the general picture presented by Dr. L. C. Cunningham, Cornell University, at the annual Cornell Nutrition Conference for Feed Manufacturers.

The conference, held Nov. 4-5 at the Hotel Statler, was sponsored by Cornell University in cooperation with the American Feed Manufacturers Assn. An early tabulation of the registration showed it was pushing the record figure of 675 set last year with a solid indication that a new record would be established. (A complete summary of other talks at the conference will appear in next week's Feedstuffs.)

Dr. Cunningham indicated an increase of about 3% in the total production of meat, milk and eggs, with hogs and laying hens accounting for most of the increase.

He stated that the 1955 spring pig

(Continued on page 73)

AFMA Survey Points to Significant Hog Boost, Some Other Increases

CHICAGO—A significant increase in hog numbers, a small increase in milk cows, commercial broilers and laying hens, and decreases in other classes of livestock and poultry on farms are indicated for the 1954-55 feeding year.

These conclusions were reached last week by the American Feed Manufacturers Assn.'s Feed Survey Committee, which met in Chicago for two days to analyze feed supplies and use during the next 12 months.

Total feed use was estimated at some 125 million tons for 1954-55, which is well within the indicated total supply.

The committee pointed out that for the feed year 1954-55, total supplies of grains, oilseed meals and by-products for feed in the U.S. are large, despite drouth in some areas. Assuming much of the large carryover of corn is available at a price, total supplies for feed amount to almost 140 million tons. This compares with 117 million tons actually fed during 1953-54 and the indicated use of 125 million tons in 1954-55. The grains, particularly corn, are in relatively more abundant supply than are the high protein feeds.

Protein Feed Deficit

The AFMA committee, made up of outstanding college men, said a close analysis of the feed supply and use picture indicates adequate supplies of feed grains and other low protein concentrates, but a calculated deficit of high protein feeds. The calculated deficit amounts to less than 5%, whereas the supply of grains and millfeeds exceeds estimated usage by more than 10%.

The drouth, now in its third year, has spread to additional areas. The feeding rates used in calculations in the committee report on feed use contemplate more than the usual movement of feedstuffs from areas of surplus production to areas of short feed supply.

The 1954-55 AFMA Feed Survey Committee included 23 members from colleges throughout the country. The committee was divided into various sub-committees, each covering a certain aspect of the feed situation.

Here is a summary of the estimates

(Continued on page 77)

FEEDSTUFFS FEATURES

Texas Nutrition Conference	26
Effect of Election	8
Feed Output by States	4
Grain Contamination Study	61
Convention Calendar	33
New Products..38 Joe Brooks..	40
Ringing the Cash Register	46
Putting Feed Research to Work..	68
Classified Ads	70
Feed Markets in Detail	74
Index of Advertisers	79

FDA Authorizes Sale of Stilbestrol Pre-Mix for Use in Cattle Feeds

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON — The Food and Drug Administration this week authorized the sale of a pre-mix or supplement containing the hormone diethylstilbestrol for use in manufactured cattle feeds.

The authority was granted to Eli Lilly & Co., Indianapolis.

This authority to proceed with the sale of this pre-mix was based on evidence submitted by the Lilly company which was obtained from scientific data adduced by Iowa State College beef cattle feeding experiments.

Authorization of the sale of the premix follows Iowa State College reports earlier this year of research showing how stilbestrol increases liveweight gains in cattle and decreases feed costs. The college also pointed out that the meat tissues from stilbestrol-fed cattle appear to be free of harmful residues of stilbestrol, and data of this nature was submitted to FDA.

FDA's grant this week of authority to proceed with sale of the stilbestrol pre-mix does not constitute FDA approval of the product. What FDA has done is to grant authority for sale of the pre-mix on the basis of the new drug application presented by the Lilly company and the scientific

(Continued on page 8)

New Mill Survey Section

This issue of FEEDSTUFFS includes a special New Mill Survey Section, which points up the increase in feed manufacturing efficiency and the expansion of production facilities. The section, in the center of this issue, tells of feed plant building and modernizing, and it describes important phases of modern feed production. It pays tribute to the new Feed Technology Program at Kansas State College and the companies and persons who helped make it possible. The new feed school building and mill at Kansas State are described. The section also salutes the Midwest Feed Production School.

Record Attendance Seen for Midwest Production School

KANSAS CITY—A record attendance is assured at the fifth annual Midwest Feed Production School at the Hotel President here Nov. 15-17, and additional registrations still are being received each day, according to Lloyd S. Larson, executive vice president of the sponsoring Midwest Feed Manufacturers Assn.

Advance registrations passed the 350 mark this week. This compares with a total of around 300 a year ago, while previous schools attracted about 250 enrollees. This year's total includes feed men from 38 states, Canada and two enrollees from Turkey who are current students at the Feed Technology School at Kansas State College.

Plenty of hotel space still is available, according to Midwest Association officials, so last-minute registrants can be accommodated. It is indicated that at least three hotels still have rooms available.

Several new features are on the 1954 program which is under the direction of Oscar Straube, Pay Way Feed Mills, Kansas City. A produc-

(Continued on page 77)

★ FEEDSTUFFS ★

A Weekly Newspaper Published by
THE MILLER PUBLISHING CO.
2501 WAYZATA BLVD., MINNEAPOLIS, MINN.
(Address Mail to P. O. Box 67, Minneapolis 1, Minn.)
(Telephone: Main 0575. All Offices Serviced by Bell System Teletype)

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Correspondence regarding subscriptions, changes of address, etc., should be sent to Circulation Manager, Feedstuffs, Box 67, Minneapolis 1, Minn. Single copies 20¢. Subscription rates: One year $4, two years $7, in the U.S., U.S. possessions, Canada and Pan-America. Add $3 a year for postage to other countries. Readers are urged to give prompt notice of change of address and to anticipate future changes by at least two weeks' advance notice. Ask postman for form 22-S. Feedstuffs accepts subscriptions only through its own offices; no subscription solicitors are employed or recognized. Associated publications: The Northwestern Miller, The American Baker, Milling Production, Croplife.

Entered as second-class matter Feb. 25, 1947, at the post office at Minneapolis, Minn., under the Act of Mar. 3, 1879

The controlled circulation of this issue is concentrated in the northeastern states

Production Progress

WE KNOW of one large company, a processor of grains in various forms, including formula feeds, that plans to spend $20 million in the next three years on plant modernization.

A leading feed manufacturer, who is in a position to study the matter from personal observation and with a background of practical experience, says the cost of making a ton of feed of a given type today ranges from $3.50 to $12 or $13. The difference results from labor saving and other plant efficiencies.

These are dramatic ways of saying that the feed company that fails to keep pace with modern production techniques and facilities is going to find competition tougher and tougher. It won't last long.

With these things in mind, we think it is timely to publish, as we have this week, a general review of feed mill modernization, either by new building or by transforming an old plant. This is contained in the New Mill Section, or Section Two of this issue of Feedstuffs.

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THE formula feed business has a tremendous future. It is still a long way from realizing its potential. But the old-fashioned, comparatively inefficient plant is not going to participate in the growth. Feed processing is by no means static. Many improved methods have been and are being found, and relative costs are all in favor of them. It is as important to keep up with the progress in production as it is to keep up with the progress in nutrition.

It is not necessarily a matter of a big plant or a little plant. Within certain limits and with regard for basic requirements, either can be efficient. Location is important, of course, but the advantage of a good location can be erased or minimized by high cost operations within the plant. The essential thing is the realization that, under any normal circumstance or over a period of a few years, the feed man who has a production cost of $10 for a ton of feed is not going to be able to compete successfully against one who can make a similar feed for $4 a ton.

Of course, not everyone can build a new plant or modernize an old one simply because there are obvious advantages in such action. Financing is not that easy. The pace of modernization, consequently, will be slower than it would be without such necessary consideration. But, however slow it may be, it will be continuous and certain. The pressure of competition will be constantly increasing for the operator who does not admit the trend and make his own changes toward lower cost operation just as rapidly as he can do so.

High cost mills have been able to get by to some extent in recent years because feeding ratios have been good, generally, and because the modernized, low cost competitor was the exception. Both of these factors are undergoing important changes. The New Mill Section lists more than 80 mills newly built or substantially remodeled during the past two years. The number will grow continually. Feeding ratios are subject to change, of course, but the high feeding profits of the wartime period and immediately afterward are not normal and cannot be expected to recur unless there is some emergency situation. The mill that will build volume and make money in the future will be the low cost plant. This will be true because the feeder will demand it; he cannot afford to do otherwise. As there are more and more low cost feed mills, the high cost mills will face constantly more difficult going. The narrower the feeding ratio, the more the advantage to the feed manufacturer who can price his feed below his competitors and still make a profit.

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HOW are these low costs accomplished? In various ways, all of which are summarized in the New Mill Section. Mill design is important. Other factors include more automatic operations, less direct labor, faster mixing and other operations, more efficient handling and storage of ingredients and finished feeds, faster and more efficient packaging operations, production planning, work standards and better personnel handling and training.

Our New Mill Section in this issue has been prepared for the purpose of centering the attention of the feed industry on the trend toward increased manufacturing plant efficiency—to point out what has been done, what can be done, and the benefits to be expected.

The Section also serves to mark the nearing completion of the new pilot feed mill at Kansas State College, which will be a working laboratory for the Feed Technology School at that institution. In our opinion, this has been one of the greatest cooperative movements ever carried out by an industry. There have been few, if any, like it. The idea for a Feed Technology School to train men in feed formulation, production and merchandising was first proposed in 1950. It was given official industry backing in 1951. The School itself is now in its second year, and the pilot mill will soon be in operation. To accomplish this, 375 cash contributors have given a total of $224,362 to the project, and 97 contributors of machinery and services gave the equivalent of $136,517. Contributions came from every state in the union and several foreign countries. The Feed Technology School without question will furnish skilled and trained manpower to the industry in the future to an extent that will repay the industry and its customers many times the investment.

A third object of the New Mill Section is to cite the progress of the Midwest Feed Production School, the 5th session of which will be conducted in Kansas City Nov. 15-17. This short course in feed production methods was started in 1950 under the auspices of the Midwest Feed Manufacturers Assn., which continues to sponsor it. It has been a tremendous success, with registrations this year indicating an attendance of more than 350 persons from all parts of the nation and several foreign countries. It has been of great value in bringing to industry attention the improved methods of production, and in instructing key men in those methods.

Better eating habits plus an expanding population in this country will bring a demand for meat, milk and eggs two or three times as great as the present—and within 15 or 20 years at the most. Such production will cause a continued large growth in the formula feed business, because there will be no other way to meet the demand.

In this growing industry, trained manpower and economical production and distribution will pay large rewards. The feed man who ignores the trend will be left behind.

A FEEDSTUFFS FORMULA FEEDS: HOW'S BUSINESS? FEATURE

In the face of advancing feed prices, demand for formula feeds continued to fall below usual seasonal volume, and in some areas tonnage fell off for the week. Poor feeding ratios persist. Handling of drouth feed in the Southwest has helped keep up operations for some plants, but trade there in general is depressed. Millfeeds, soybean meal and animal by-products moved up in price, and the index of wholesale feedstuffs prices gained 5 points to 220.4 in the week ending Nov. 8. The index of feed grain prices dropped 3.7 points to 218.1 in the same period. (Ingredient details on pages 74-76.)

Northwest

Demand for formula feed in the Northwest held about steady during the past week, with most manufacturers regarding the level of business unsatisfactory for this time of the year.

Volume during October was generally off from October a year ago, although the percentage of increase over September in some cases indicated an earlier seasonal pickup than was experienced a year ago. A further improvement is anticipated with cold weather at hand, although it is by no means certain that tonnage in the coming months will catch up with last year's level.

A slight improvement in laying feeds was noted by some manufacturers, but this volume continues to be the chief drag on current business volume. Egg prices have advanced some but they have a long ways to go before producers will be satisfied with their returns.

Dairy feed business is holding up well, and beef cattle feed shipments have stepped up. Dairy feed trade has been somewhat slow in developing, but the outlook appears good. Hog feed business continues fair.

Turkey hens are reported to be bringing fairly good prices of around 32¢ lb., but toms are discounted sharply to about 22¢ lb. to the disappointment of raisers.

The egg-feed ratio in the area in October remained at a low 6.4, the same as in September, less than half of the 13.7 ratio a year ago.

Plant operations were held to two and a half shifts, five days a week, with some improvement in backlogs noted.

Ohio Valley

Formula feed sales this week in the Ohio Valley continued at the slow pace of recent weeks, and there were no indications of an improved situation in the near future. Despite the continued low prices for eggs, there was a slight increase in demand for egg mashes, but the list, otherwise, remained virtually static, insofar as tonnages were concerned.

With reference to egg prices, manufacturers in this area are in agreement with Secretary Benson that the remedy for the present unsatisfactory situation is curtailed output and not in government price props. It also was pointed out that the slow but steady increase in employment eventually will be reflected in increased egg and poultry consumption, thus aiding to some degree in bringing the supply and demand setup to a more profitable level.

Reflecting the market situation, manufacturing operations this week continued at only about 50% of mill capacities, with no changes in prices of formula feeds or in supplies of ingredients being reported.

Southwest

Southwestern manufacturers reported little or no improvement in feed sales. Turkey feed shipments have been completed for the season and there has been no favorable turn in poultry or hog feeding ratios. Thus, a prominent slack in directions is difficult to cope with.

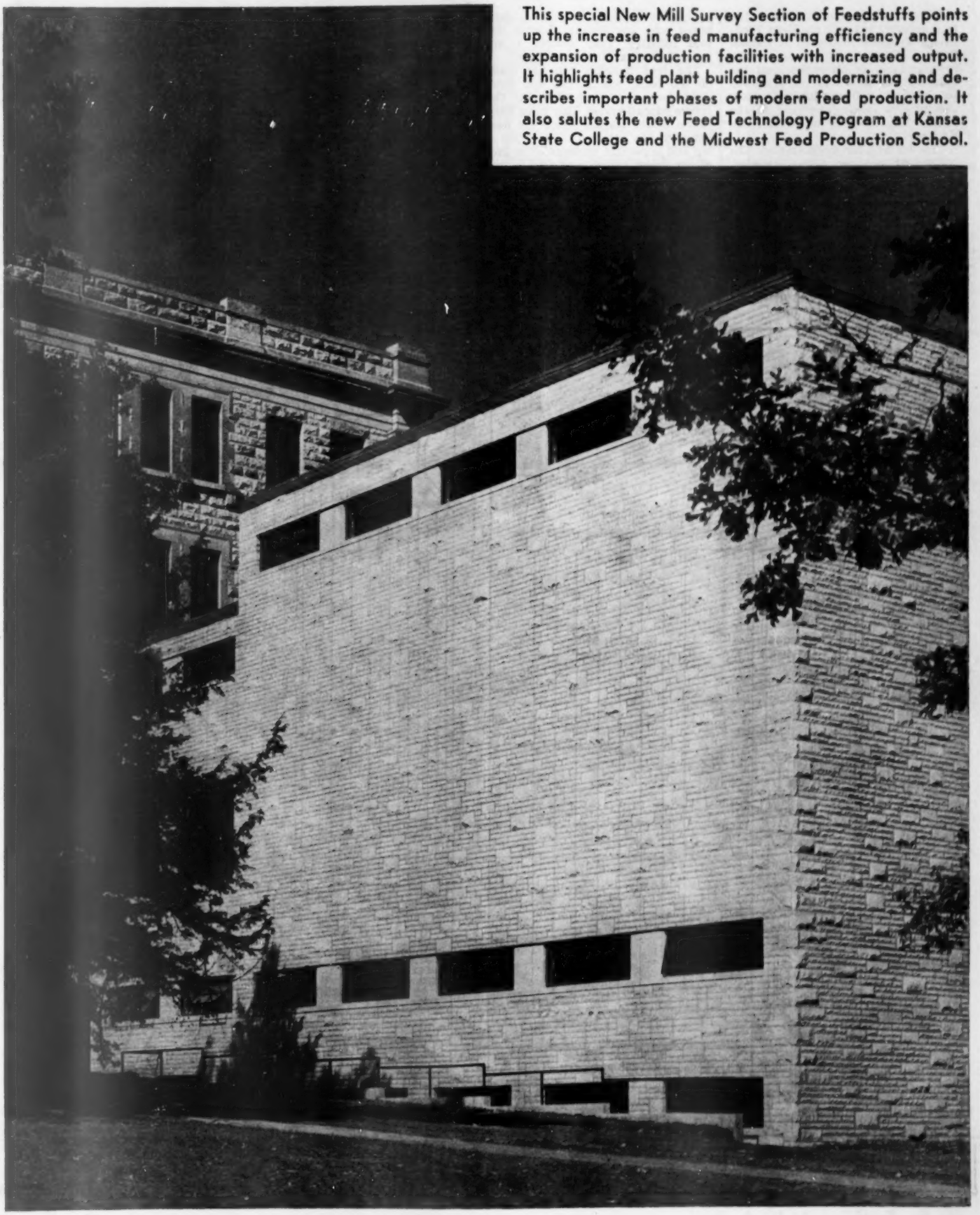
Some mills have been able to operate on reasonably adequate schedules through special effort with drouth dairy and cattle feeds. This production accounts for a six day run at

(Continued on page 78)

FEEDSTUFFS

New Mill Survey Section

This special New Mill Survey Section of Feedstuffs points up the increase in feed manufacturing efficiency and the expansion of production facilities with increased output. It highlights feed plant building and modernizing and describes important phases of modern feed production. It also salutes the new Feed Technology Program at Kansas State College and the Midwest Feed Production School.



IN TWO SECTIONS

November 6, 1954

SECTION TWO

The Feed Industry Goes to College

By Paul Berg

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A much-talked-about subject in the feed industry today is the Feed Technology Program instituted at Kansas State College. This interest is the manifestation of an enthusiasm the industry has shown for its endeavor to become college-educated. Now everyone is looking forward to the formal mill opening at Manhattan, Kansas.

The building has been erected. The equipment is now being installed. This equipment has been given by the equipment manufacturers and suppliers who are associated with the feed industry. They deserve a big vote of thanks for their support.

The feed industry can pat itself on the back, too. It has had foresightedness to project itself into the future educationwise. This is an indication of the stature which the feed industry has attained. It is truly a big and important business. It is part of our bread basket, and food is our most important commodity. It has room to grow and it will grow. But growth in the scientific feeding of livestock has increased the feed industry's responsibilities. The farm industry now depends upon the continuation of improvements in feeding methods; therefore the education of young men in the feed industry will contribute greatly to this improvement.

The Industry Advisory Committee, which was appointed shortly after the start of the project, was assigned the full responsibility to carry on the work. It established the objectives. It raised the money. It designed the project. It solicited the equipment and it is now handling the installation. The men on the committee have given liberally and unselfishly of their time, and now they can present a description of the project.

The basic objectives are to supply laboratories for nutritional studies, classrooms for drafting, classrooms for discussion, and a laboratory type feed mill for providing actual experiences in feed mixing. Kansas State College has contributed liberally of its time advising the committee of these requirements for teaching this new subject.

The design of a feed mixing laboratory posed some unusual problems. No similar project existed to provide guidance. The committee resolved these requirements into such things as representation of types of operation, representation of types of equipment, representation of suppliers, and establishment of a level of capacity that would fit within the limits of space and services.

To illustrate some of the variety of equipment that has been incorporated, there are different types of drives, feeders, pallets, hammermills, conveyors, bucket elevators, mixers, pellet mills, fans, bagging scales, screeners, cutters, bins, dust collectors and scales. This variety has been carried to the full practical limit. The representation of suppliers is illustrated in the fact that there are 90 equipment companies on the donor list for major pieces of equipment. Every basic type of feed mill operation has been used.

There was also the requirement of

On the Cover

Pictured on the cover of this section of Feedstuffs is the new Feed Technology Program building at Kansas State College. The building will house classrooms, laboratories and the laboratory-type feed mill.

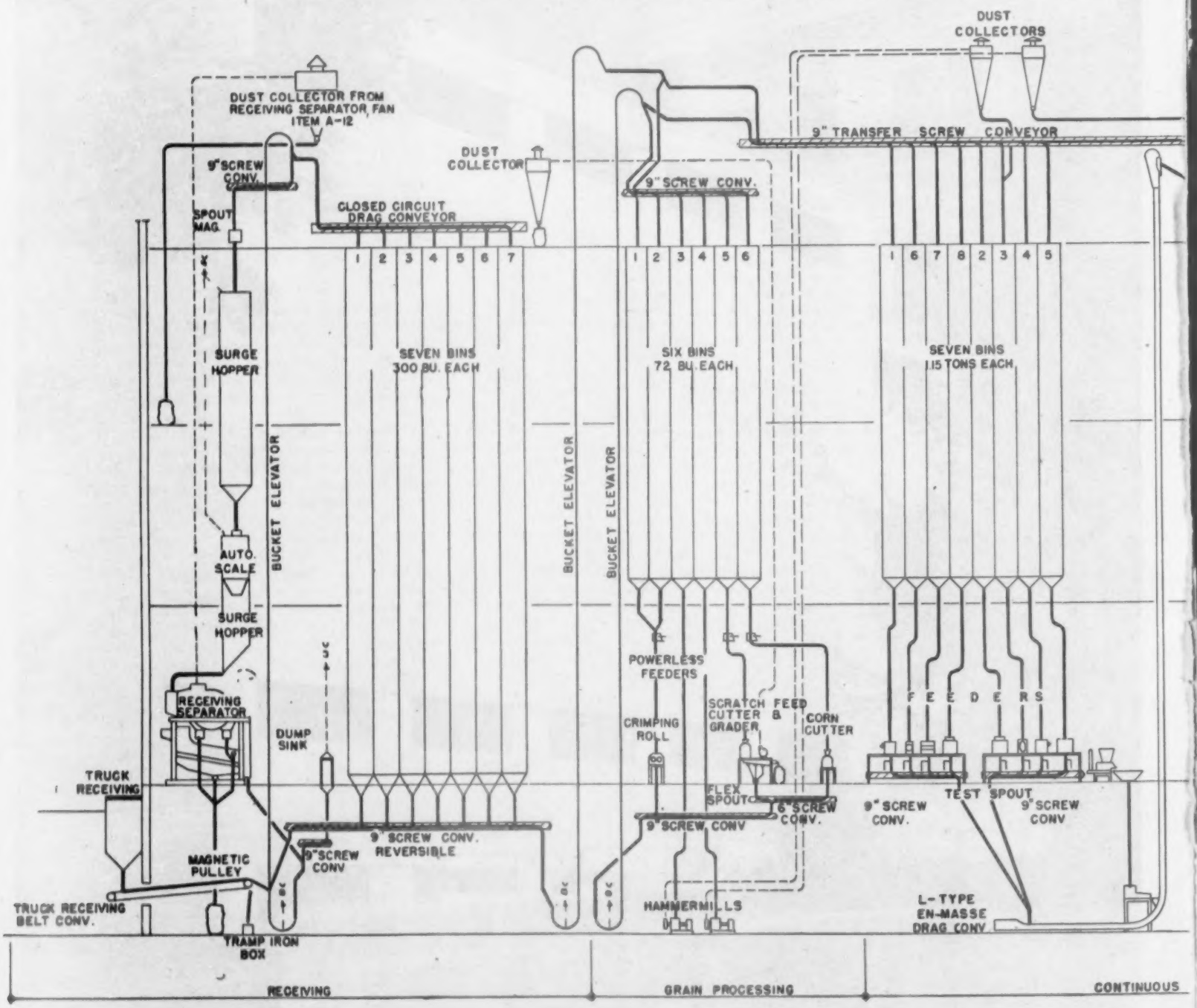

FIGURE
FLOW
FEED TECHNOLOGY
KANSAS STATE

EDITOR'S NOTE: Paul Berg, the author of the accompanying article, furnished the design of the feed mixing plant at Kansas State College. Mr. Berg, of Fort Wayne, Ind., is a consulting engineer, specializing entirely in grain and feed mills. He is a 1931 engineering graduate of Iowa State College. After graduation he worked as assistant chief engineer for John Morrell & Co., where he first became acquainted with feed manufacturing. In 1941 he joined the Central Soya Co., where he was chief engineer. He entered the consulting field in 1946 and now has plants in 24 states and has done consulting work in foreign countries. Mr. Berg has developed a number of new ideas in feed milling. And he now holds three patents and has several more pending. Mr. Berg has been very active in the feed technology program project for Kansas State College, serving on the technical committee of the industry advisory group. In addition to designing the plant, he has done general consulting for the school and has solicited much of the equipment for the mill.

an arrangement that would provide convenience of flow, space for teaching, and clearness for observation to correlate the different activities. In addition to these specific requirements, the mill most of all must be a complete feed mixing unit capable of actually turning out mixed feed in a modern manner — a push button mill.

If you visit the campus for an inspection trip, you will probably approach the new building from the north side. It is a beautiful building in native Kansas stone finish, whose architecture blends with the surrounding campus structures. Conveniently to the right is East Waters Hall, where other milling subjects are taught. Upon entering the building, you would observe that the class rooms are in the west portion of the building and that the feed mixing laboratory occupies the east portion. There are three floors on the class room side of the building and four floors with a basement on the feed mixing laboratory side. The laboratory side has a concrete first floor with steel grating on the second, third and fourth floors. Grating was chosen to provide cleanliness, visibility, and flexibility for changes or future installations. All the rooms are well lighted.

Flow Diagram, Plan

To help guide you on an imaginary inspection trip, there accompanies this article a Flow Diagram (Fig. 1) that exhibits all the machinery in relation to each other in flow. A Flow Plan (Fig. 2) shows the basic flow in plan to orient the different activities. There are also shown two typical cross-sections through the building, one showing the receiving, storing and processing equipment (Fig. 3), and the other showing the mixing, pelleting and bagging (Fig. 4).

The flow plan (Fig. 2) is an L-shaped arrangement with a future extension to develop into a U-shape. The materials coming in by truck for conversion from sacks to bulk are received in a dump-pit at one end of the "L," where the weighing and cleaning are accomplished before passing to storage bins which make up one leg of the "L." In the corner of the "L" is located the processing equipment. The other leg of the "L" consists of the continuous mixing, batch mixing and pelleting systems. From this leg of the "L" the finished product is converted into bags in equipment which flows toward the center aisle. This center aisle is devoid of machinery on the first floor, since this space is necessary for flow of sacked material into and out of the area. The portion that remains, reserved for research, will convert the "L" into a "U" arrangement. If you were standing at the center of the imaginary "U," all the operations on all floors would be visible. The research area will be important for graduate work and for testing new products that come on the market.

Paul Berg

The open end of the completed "U" will face the sack storage area, where a truck dock is located for receiving raw materials in sacks and for loading finished feed to trucks. The mixed feeds that are produced in this laboratory mixing unit may be disposed of at the farms where the college

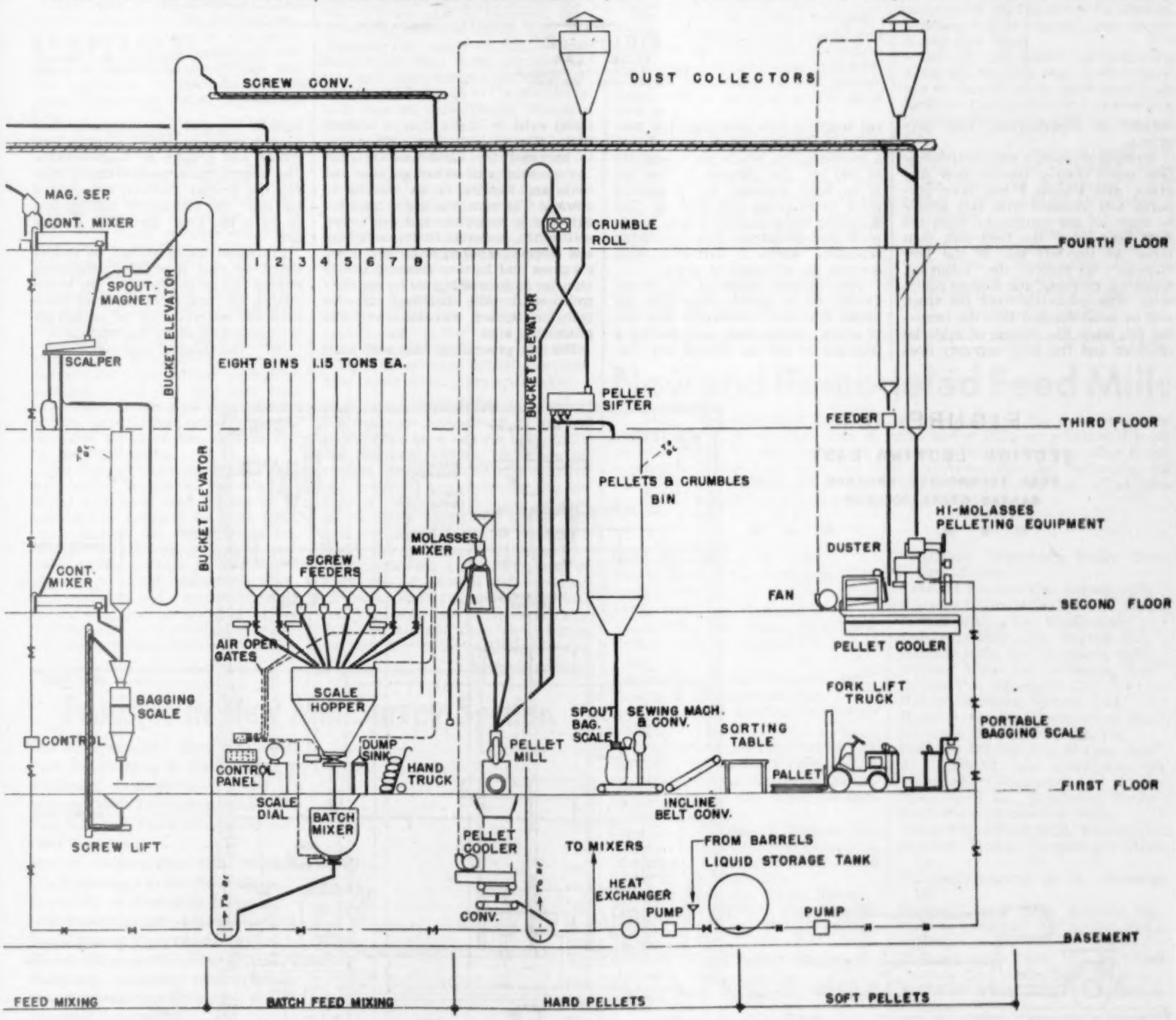

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DIAGRAM
PROGRAM
COLLEGE

PAUL BERG
FEED MILLING ENGINEER
FORT WAYNE, INDIANA

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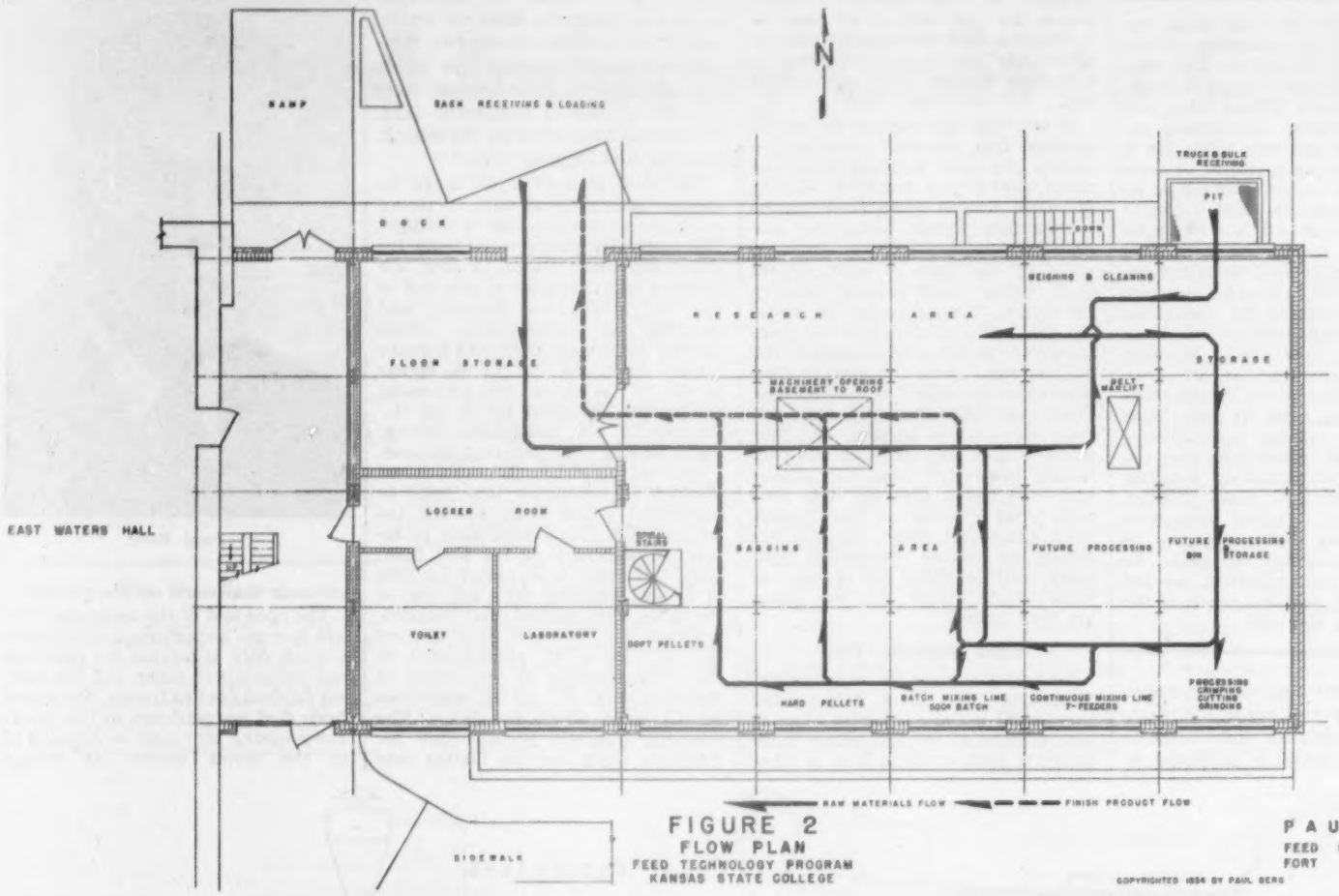

FIGURE 2
FLOW PLAN
FEED TECHNOLOGY PROGRAM
KANSAS STATE COLLEGE

PAUL BERG
FEED MILLING ENGINEER
FORT WAYNE, INDIANA

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carries on experimental feed programs.

Nothing explains a feed mill operation more clearly than a flow diagram, and Figure 1 has been prepared and included with this article to show all the equipment, with the flow lines, that the feed mill contains. At the left side of the flow diagram is shown the receiving, weighing, cleaning, and storage equipment. The materials from the truck will be hand-dumped into the receiving pit, since the volume of material received and the total capacity does not warrant bulk trucking. The material is elevated and discharged into a receiving bin, which has a capacity of 340 bu. The purpose of this bin is to hold material for inspection prior to weighing and cleaning. The weighing takes place in a 6-bu. grain scale that discharges into a receiving separator which is furnished with screens for all types of grain.

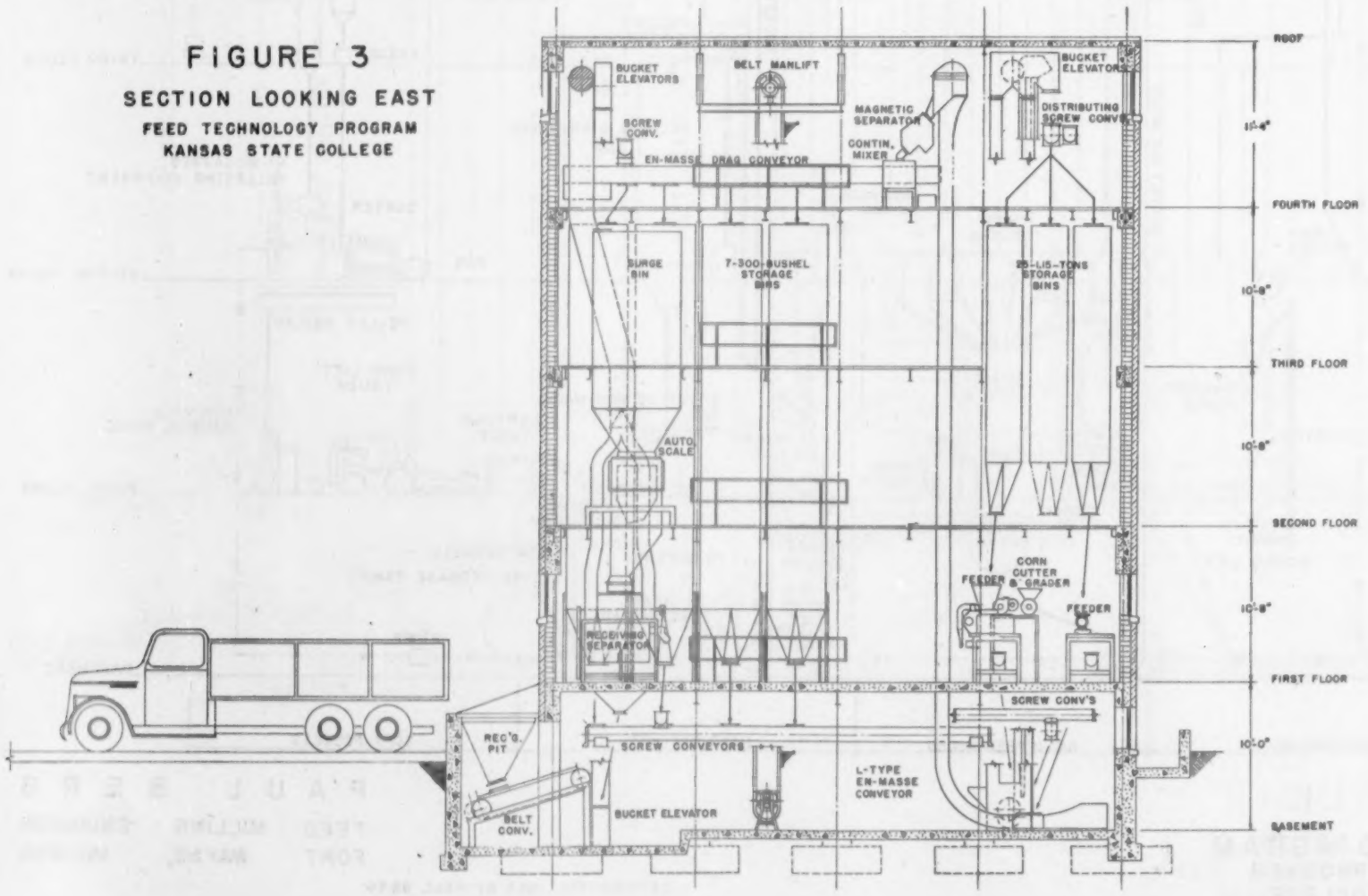
The cleaned material is re-elevated, and by closed-circuit type en-masse conveyor, discharges into one of seven storage bins, each having a capacity of 300 bu. Should any material exist in sacks that is wanted in the flow or in storage, a floor sink is provided for hand-dumping, and the material can either go over the scale and cleaner, or go directly to storage. The conveyor under the storage bins is reversible and will either return the material to the weighing and cleaning equipment for inventory purposes and further cleaning before transfer to processing, or by opposite rotation it will discharge into a transfer bucket elevator over the processing area.

The six processing bins will each hold 62 bu., and these discharge into an oat crimper, cutter, scratch feed cutter and grader, or hammermills. The hammermills pneumatically convey the ground material either to a bin over the continuous mixing line or to a bin over the batch mixing line.

Processed material can be re-elevated to bins over the continuous mixing line or to bins over the batch mixing line, and from either of these lines the material may be bagged off or mixed with other ingredients.

(Continued on page 54a)

FIGURE 3
SECTION LOOKING EAST
FEED TECHNOLOGY PROGRAM
KANSAS STATE COLLEGE



Industry Gives Production More Emphasis

Feed Manufacturers Stress Efficiency As Products Improve and Output Gains

The production of formula feed has boomed in recent years and further gains are in prospect during the next several years.

With that hike in output by the nation's feed plants, have come marked improvements in feed manufacturing efficiency and rapid building and remodeling of feed mills.

Feed manufacturers have become more and more production-minded—more and more interested in new and modernized plants and production facilities and methods. They have built new mills, remodeled old mills, and installed new equipment and techniques to take care of a business volume which has increased 75% since 1942 and promises to increase more in the years ahead. Simultaneous with the production growth has been increased emphasis on efficiency, which manufacturers recognize is necessary to keep their costs at a competitive level while turning out quality products.

Just some of the evidence of the greater interest in efficient feed production may be seen in the establishment of the Feed Technology Program at Kansas State College and the nationally recognized Midwest Feed Production School at Kansas City.

Production Gains

Formula feed production in the pre-war year of 1940 was only 18 million tons. Output jumped under the stimulation of wartime food production, rising to 30 million tons in 1945. Feed output slipped back somewhat during the first postwar years but then climbed steadily to an all-time high of 34.4 million tons in 1952. Affected by the drouth in the southwestern states, feed production dipped to 33.7 million tons.

However, American Feed Manufacturers Assn. estimates for the first part of 1954 indicated that production probably would rise to a new high this year. For the first eight months of 1954, formula feed output was running 5% ahead of the 1953 volume for the same period.

But that isn't all. One of the industry's leading economists recently predicted a formula feed volume of 55 million tons annually by 1960. Principal reasons for anticipating this further sharp growth include the nation's rapidly growing population; increasing consumer demand for meat, milk and eggs and a continued trend toward an animal agriculture; further developments in knowledge of nutrition and practical application of this knowledge; and the educational endeavors of the industry which are bringing greater recognition and acceptance of formula feeds.

Room for Expansion

Disregarding the high birth rate and other factors, there still is plenty of opportunity for feed sales expansion. For example, even though 70% of the total poultry feed requirements come out of some manufacturer's branded bag, there still is a 30% untapped market. Only 30% of all the concentrated feed intake of dairy cattle is manufactured feed. Of the total concentrated feed used by beef cattle, only 14% is manufactured feed. And only 5% of the feed consumed by hogs is a product of the feed manufacturing industry.

At the present rate of increase, a population of 200 million is expected by 1975. At the same time, per capita demand for animal products has been increasing. Where are these additional products to come from? Some of the increase can be obtained from greater numbers of cattle, hogs and poultry. But much of the increase must come from more efficient feed use. And these things must mean further marked growth in the production and sale of scientifically balanced feed.

The big past and potential feed tonnage increase is not the only factor in expansion and improvement of production facilities. Other factors included the greater number of varieties of feeds, increased complexity of modern scientific feeds, higher labor costs, and changes in packaging and delivery methods.

These various influences from outside the feed mill proper are being reflected within the feed mill—in improved, modernized and new mills bringing greater efficiency and flexibility and greater output per man hour along with improved quality.

New Mills

Many new mills—both large and small—have been and are being built, many are remodeling, many are installing new equipment and adopting new methods. Accompanying this article is just a partial list of feed plants which have been newly constructed or substantially remodeled during the past couple of years.

The following pages tell some of this story of growth and increased efficiency. New and remodeled mills are described, and in these descriptions one can see the modern trends and new developments. Other articles deal with specific topics relating to some of these recent developments.

What are some of the new developments and trends in feed production?

One, of course, is automation—less direct labor and more automatic operations; today's push-button mills with remote controls.

Bulk handling of ingredients has been increasing, bringing a need for more and better handling and storage facilities. In this connection, the increase in pneumatic handling may be noted, and one of the articles in this section deals with the use of air in feed plants to convey materials.

With today's modern feeds, there is more processing of ingredients, bringing an increase and improvement in grinding and other facilities.

In addition to the push-button weighing and mixing aspects of the feed mixing operations, the mixing itself has become more efficient. An adequate mix can be obtained in less time, and various mixing operations are described where batch mixing, with two or even one mixer, has become almost continuous with modern equipment.

More Pelleting

The demand for pelleted and crumblized feed has increased greatly, and pelleting and crumbling operations have been increased and improved. One of the articles in this section deals with a pelleting system in a feed mill.

Modern scientific feeds have become much more complex, with more trace and other ingredients. This has increased the importance of good proportioning and good premixes. An article on pre-mixing facilities and operations for manufacturers who make their own premixes is part of this section.

The more technical nature of modern feeds also plays up the importance of the feed mill laboratory, a subject which also is covered in this section.

More molasses and other ingredients are being used in feeds, and this development underlines the importance of good facilities for storing, handling and processing these ingredients into feeds.

One of the recent developments along this line has been the increased use of fats in feeds. Information on facilities for handling and mixing fats is provided in an article in this section.

With today's modern feeds and modern mills and equipment, more stress also is put on cleaning of materials and provision for magnetic protection.

At the same time, for economic, comfort, cleanliness and others reasons, there is much more stress on effective dust control and collection.

Within the plants, for greater effi-

(Continued on page 59a)

Formula Feed Production

(Millions of Tons)

1940	18.0
1941	19.0
1942	20.0
1943	29.0
1944	29.5
1945	30.0
1946	25.5
1947	26.0
1948	25.5
1949	28.5
1950	29.1
1951	32.8
1952	34.4
1953	33.7
1960 (Predicted)	55.0

Sources: American Feed Manufacturers Assn.; U. S. Department of Agriculture; Feedstuffs Research Department.

Features in New Mill Survey Section

The Feed Industry Goes to College	2a
Cash Contributors to Feed School	6a
Machinery Contributors	8a
Midwest Feed Production School	8a
New Efficient Plant—Cosby-Hodges	9a
Feed Premixing	11a
Modern Country-Type Mill—Swift & Co.	14a
The Laboratory in the Feed Mill	16a
Use of Air in Conveying Materials	18a
Mill Modernization—Lindsey-Robinson	21a
Use of Bins in Feed Plants	25a
Warehousing and Handling System—Pillsbury	28a
Designing, Equipping Custom Mills	32a
New Custom Plant—Klemme, Iowa	32a
Pelleting System	36a
Machinery Group Aids Industry	38a
Retail Plant Improvements—Rochester, Minn.	42a
Specialty Mill—C. A. Swanson	45a
Facilities for Handling Fats	46a
Supplying Steam for Pelleting	58a
Index of Advertisers	59a

New and Remodeled Feed Mills

Many feed mills have been built or remodeled in the last few years. Following is a list of more than 80 mills newly built or substantially remodeled during the past two years or now under construction. This is not a complete list of such mills, but it is a representative list indicating the extensive plant building and modernization in the feed industry. (*Indicates substantial remodeling of mill previously in existence.)

• • •

*Ada Milling Co., Ada, Okla.
Albers Milling Co., Jefferson, Wis. (dog food).
Allied Mills, Inc., Gainesville, Ga.
Allied Mills, Inc., Mason City, Iowa.
Archer - Daniels - Midland Co., Eaton, Colo.
Armour-Ches-Peake, Pittsville, Md.
Aubrey & Co., Louisville, Ky.
Artesia (N.M.) Alfalfa Growers Assn.
Avenales Cattle Co., Paso Robles. Cal.
Batcheller's, Inc., Sioux Falls, S.D.
Blue Ribbon Feeds, Thorndike, Maine.
Boulay Brothers Co., Fond Du Lac, Wis.
Cape County Milling Co., Jackson, Mo.
Cameron Feed Mills, Russellville, Ark.
*Centennial Flouring Mills Co., Feed Mill at Portland, Ore.
*Clement Grain Co., Waco, Texas.
Community Feed Mills, Princeton, Ill.
Henry Clark Feed Mill, Hamburg, Minn.
Colorado Milling & Elevator Co., Ft. Collins, Colo.
Cosby-Hodges Milling Co., Birmingham, Ala.
Dannen Mills, St. Joseph, Mo.
William Davies Co., Inc., Danville, Ill.
Denver (Colo.) Feed Co.
Depies Mill, New Holstein, Wis.
*Dixie Feed Mills, St. Louis.
Elkhart County Farm Bureau Cooperative Assn., Goshen, Ind.
Joe Ray Enterprises, Danville, Ark.

• • •

*Farmers Cooperative Union, Sterling, Kansas.
Farmers Produce Co., Rogers, Ark.
Farmers Roller Mills, Spencer, W. Va.
*Fruen Milling Co., Minneapolis.
Galveston Mills, Inc., Gretna, Va.
General Mills, Inc., Belmond, Iowa.
General Mills, Inc., Stockton, Cal.
Grange Co., Lancaster, Cal.
Hafner Brothers, Newell, S.D.
Hales & Hunter, Cartersville, Ga.
Hartman Bros., Wakarusa, Ind.
Hubbard Milling Co., Marion, Ind.
J. D. Jewell, Inc., Gainesville, Ga. (leased by Pillsbury).
Josey-Miller Co., Beaumont, Texas.
Kent Feeds, Muscatine, Iowa.
*King Midas Feed Mills, Minneapolis.
Klemme (Iowa) Cooperative Grain Co.
*Lindsey-Robinson & Co., Roanoke, Va.
Samuel Lipman Sons, Augusta, Me.
Livonia Feed Mill & Supplies, Milan, Mich.
Massachusetts Farm Bureau Federation, East Springfield, Mass.
McMillen Feed Mills, Chattanooga, Tenn.
Mid-West Mills, Abilene, Kansas.
H. L. Moore Co., Richland, Ga.
Moroni Feed Co., Moroni, Utah.
*Nutrena Mills, Inc., Coffeyville, Kansas.
Oklahoma Farmers Union Co-op., Yukon, Okla.

(Continued on page 53a)

Contributors of Money

A

Abbott Laboratories, North Chicago.
Alabama Flour Mills, Decatur, Ala.
Albemarle Paper Mfg. Co., Richmond, Va.
Allied Chemical & Dye Corp., Nitrogen Division, New York
Albers Milling Co., Los Angeles.
Allied Mills, Inc., Chicago.
Ambler Milling Co., San Gabriel, Cal.
Amburgo Co., Inc., Philadelphia.
American Dehydrators Assn., Kansas City
American Feed Manufacturers Assn., Chicago.
Ames-Harris-Neville Co., San Francisco
Ames (Iowa) Reliable Products Co.
Andale (Kansas) Farmers Co-op.
Arcady Farms Milling Co., Chicago
A. H. Ascherman, Inc., San Francisco.
Ashcraft-Wilkinson Co., Atlanta
Thomas H. Avery, Le Roy, N.Y.
Ray C. Ayers & Sons, Inc., Slaton, Texas

B

E. W. Bailey & Co., Montpelier, Vt.
William Lee Bailey, Topeka, Kansas.
Batcheller's Inc., Sioux Falls, S.D.
Bates Grain Co., Kansas City.
B & D Mills, Grapevine, Texas
Beacon Milling Co., Cayuga, N.Y.
Bemis Bro. Bag Co., St. Louis.
Walter Berger, Baltimore, Md.
Bert & Wetta, Maize, Kansas.
Black, Sivalls & Bryson, Inc., Kansas City.
Blair Elevator, Atchison, Kansas.
Blatchford Calf Meal Co., Waukegan, Ill.
Boncraft, Inc., Buffalo.
Borden Co., New York.
Milton Bosse, Ellinwood, Kansas.
Bowman Feed Products, Inc., Holland, Mich.
Bradley & Baker, New York.
Brewers Yeast Council, Inc., Chicago.
Broadway (Va.) Milling Co., Inc.
Brookhurst Mill, Anaheim, Cal.
Bruce Milling Co., Inc., Kansas City.
Buckeye Cotton Oil Co., Cincinnati.
Buffalo (N.Y.) Meat Products, Inc.
Bullard Feed Co., Chicago.
Burhop & Co., Fort Wayne, Ind.
L. Burmeister Co., Milwaukee.
James H. Burrell & Sons, Inc., St. Louis.
Burrows Equipment Co., Evanston, Ill.
Burrus Mills, Inc., Dallas.

C

Calcium Carbonate Co., Chicago.
Cameron Feed Mills, No. Little Rock.
A. B. Caple Co., Toledo, Ohio.
Carey Salt Co., Hutchinson, Kansas.
Central Alfalfa, Inc., Lexington, Neb.
Central Carolina Farmers Exchange, Inc., Durham, N.C.
Central Soya Co., Inc., Fort Wayne.
Cereal By-Products Co., Chicago.
Chase Bag Co., Chicago.
Chemical Packaging Corp., Savannah, Ga.
Chemo Puro Mfg. Corp., Long Island City.
Chic-O-Line Feed Mill, Chickasha, Okla.
Chilean Iodine Educational Bureau, New York.
H. K. Cochran Co., Little Rock.
Coe Seed Co., Topeka, Kansas.
Colby (Wis.) Co.
Colorado Milling & Elevator Co., Denver.
Columbia Quarry Co., St. Louis.
Commander - Larabee Milling Co. (Archer-Daniels-Midland), Kansas City, Mo., and Minneapolis, Minn.
Commercial Solvents Corp., Terre Haute, Ind.
Consolidated Products Co., Danville, Ill.
Consumers Co-Op Assn., Kansas City.
Continental Grain Co., Kansas City. In behalf of Continental Grain Co., Junction City, Kansas.
O. A. Cooper Co., Humboldt, Neb.
Co-operative Grange League Federation Exchange, Buffalo.
Co-operative Mills, Baltimore.
Corman Bag Co., Chelsea, Mass.
Corn Industries Research Foundation, New York.
Cosby-Hodges Milling Co., Birmingham.
Charles M. Cox Co., Boston.
Crete Mills, Crete, Neb.
Crown Zellerbach Corp., San Francisco.

D

Dairy Cooperative Assn., Portland, Ore.
Dairyland Milk Corp., St. Paul.
Dannen Mills, Inc., St. Joseph.
Darragh Co., Little Rock.
Davis-Noland-Merrill Grain Co., Kansas City.
H. C. Davis' Sons Mill Machinery Co., Bonner Springs, Kansas.
Dawe's Manufacturing Co., Chicago.
D. C. A., Inc., Chicago.
Deere & Co., Pryor, Okla.
De Kalb (Ill.) Molasses Co.
Derby Grain, Inc., Topeka.
Diamond V. Mills, Inc., Cedar Rapids, Iowa.
Dietrich & Gambrill, Inc., Frederick, Md.
Dings Magnetic Separator Co., Milwaukee.
Distillation Products Industries, Rochester, N.Y.
Dixie Grain Co., Shelbyville, Tenn.
Dixie Machinery Mfg. Co., St. Louis.
Dixie Mills Co., E. St. Louis, Ill.
Dodge City (Kansas) Co-Operative Exchange.
Doty Technical Laboratories, Kansas City.
Doughboy Industries, Inc., New Richmond, Wis.
Dow Chemical Co., Midland, Mich.
Dreyer Commission Co., Kansas City.

E

Eagle Roller Mill Co., Inc., Shelby, N.C.
Early & Daniel Co., Cincinnati.
J. B. Ehrsam & Sons Mfg. Co., Enterprise, Kansas.
Elk Valley Alfalfa Mills, Independence, Kansas.
Elmore Milling Co., Inc., Oneonta, N.Y.
R. D. Erwin Co., Nashville.
Rudy Eschenheimer Co., Chillicothe, Mo.
John W. Eshelman & Sons, Lancaster, Pa.
Esmueller Co., St. Louis.
Eureka (Kansas) Mill & Elevator.
Ray Ewing Co., Inc., Pasadena, Cal.
Ewing Mill Co., Brownstown, Ind.

F

Farm Bureau Milling Co., Hammond, Ind.
Farm Bureau Services, Inc., Lansing, Mich.
Farmers Exchange, Inc., Durham, N.C.
Farmers & Manufacturers Beet Sugar Assn., Saginaw, Mich.
Farmers Co-Operative Assn., Brewster, Kansas.
Farmers Co-Operative Assn., Hays, Kansas.
Farmers Grain & Supply, Greensburg, Kansas.
Farmers Produce Co., Rogers, Ark.
Fasco Mill Products, Mendota, Ill.
Faultless Milling Co., Springfield, Ill.
Feed Age, New York.
Feed Bag, Milwaukee.
Feedstuffs, Minneapolis.
Fernando Alfalfa Milling Co., Los Angeles.
Fine Chemicals division, American Cyanamid Co., New York.
Fisher Flouring Mills Co., Seattle.
Fox Co., Newfield, N.J.
Franke Grain Co., Inc., Milwaukee.
Fulton Bag & Cotton Mills, St. Louis.
Funk Bros. Seed Co., Bloomington, Ill.

G

Gainer Mills, Inc., Springfield, Ill.
General Foods Corp., Kankakee, Ill.
General Mills, Inc., Minneapolis.
J. T. Gibbons, Inc., New Orleans.
Giesby Bros. Grain & Milling Co., Monrovia, Cal.
Glidden Co., Chicago.
Goldena Mills, Inc., West Fargo, N.D.
Golden Eagle Milling Co., Petaluma, Cal.
Golden Sun Milling Co., Estherville, Iowa.
Gooch Feed Mills, Lincoln, Neb.; Salina, Kansas.
Grace Chemical Co., New York.
Grady Yancey & Co., Atlanta.
Grain Processing Corp., Muscatine, Iowa.
Grain Processing Machinery Manufacturers Assn., Chicago.
Grange Co., Modesto, Cal.
Great Western Manufacturing Co., Leavenworth.

H

Hales & Hunter Co., Chicago.
Hammond Bag & Paper Co., Wellsburg, W. Va.
Peter Hand Foundation, Chicago.
Harper Feed Mills, Inc., Washington, Pa.
Hart-Carter Co., Minneapolis.
Hayes & Stolz Industrial Manufacturing Co., Fort Worth.
Haynes Milling Co., Inc., Portland, Ore.
Dr. Hess & Clark, Inc., Ashland, Ohio.
Hiawatha Grain Co., Minneapolis.
Hill-Fairchild Feed Co., Lincoln, Neb.
Hoffmann-LaRoche, Inc., Nutley, N.J.
Hoffman-Taff, Inc., Springfield, Mo.
Earl A. Hogan Co., Kansas City.
Honeggers' & Co., Inc., Fairbury, Ill.
Honeymead Products Co., Mankato, Minn.
Horner & Wyatt Engineers, Kansas City
Hubbard Milling Co., Mankato, Minn.
Hubinger Co., Keokuk, Iowa.
Hudson Pulp & Paper Corp., Chicago.
Humboldt Elevator Mills, Humboldt, Kansas.
Humphreys-Godwin Co., Memphis.

I

Illinois Farm Supply Co., Chicago.
Industrial Research Foundation, Cicero, Ill.
Innes Elevator Mills, Warrensburg, Mo.
Intermountain Elevator Co., Denver.
International Minerals & Chemical Corp., Chicago.
International Milling Co., Minneapolis.
International Paper Co., New York.
Iowa Farm & Home Register, Des Moines.
Iowa Valley Milling Co., Iowa City.

J

Jacobson Machine Works, Minneapolis.
Jackson Grain Co., Tampa.
Chris Jensen Co., St. Paul.
Maurice Johnson, Kansas City, Kansas.
I. S. Joseph Co., Inc., Minneapolis.
Josey-Miller Co., Inc., Beaumont, Texas.

K

Kansas Soya Products Co., Inc., Emporia.
Kasco Mills, Toledo, Ohio and Waverly, N.Y.
Max Katz Bag Co., Indianapolis.
C. M. Keithe Co., Decatur, Ill.
Percy Kent Bag Co., Kansas City.
Kent Feeds, Muscatine, Iowa.
Kentucky Chemical Industries, Inc., Cincinnati.
Key Milling Co., Clay Center, Kansas.
Kice Metal Products Co., Wichita.
Kinders Debaillie, Astridlaan, Lichtervelde, Kortrijk West Flanders, Belgium.

To the best of the feed school advisory committee's knowledge, this list of contributors is complete as of Oct. 25. Contributions received after that time are not included but will be published in subsequent issues of Feedstuffs.

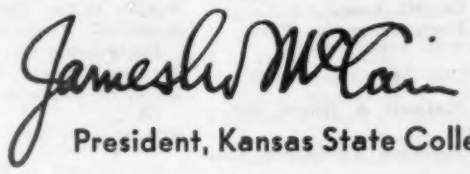
In Appreciation . . .

The establishment at Kansas State College of the nation's first instructional and research program in feed technology is an outstanding example of happy and profitable partnership between higher education and a major national industry.

The growth of the formula feed industry greatly increased the need for men professionally trained for technical, scientific and administrative positions in feed manufacturing. Recognizing that need, the industry and allied business contributed a four-story classroom building and pilot feed mill for the new feed technology program at Kansas State College. In this building centers the feed technology program in Kansas State's Department of Flour and Feed Milling Industries. Listed here and on the next pages are contributors of cash and machinery and services for constructing and equipping the feed mill for the initial installations. A total of 375 cash contributors gave

a total of $224,362. The 97 contributors of machinery and services for the mill gave a total of $136,517 in equipment and services.

We at Kansas State College recognize the vital importance of the formula feed industry to the welfare of agriculture and of the nation's economy generally and are proud and pleased to be so closely associated with your industry. I welcome this opportunity to express our deep appreciation to the contributors of the money and equipment and services required for inaugurating this important feed technology program at our institution.



President, Kansas State College

King Midas Milling Co., Minneapolis.
King Milling Co., Lowell, Mich.
M. D. King Milling Co., Pittsfield, Ill.
Knauf & Tesch Co., Chilton, Wis.
O. H. Kruse Grain & Milling, El Monte, Cal.

L

La Crosse Milling Co., Cochrane, Wis.
Land O'Lakes Creameries, Inc., Minneapolis.
Lauhoff Grain Co., Danville, Ill.
Lederle Laboratories, American Cyanamid Co., New York.
Light Grain & Milling Co., Inc., Liberal, Kansas.
Limestone Products Corp. of America, Newton, N.J.
Lindsey-Robinson & Co., Roanoke, Va.
L'pscomb Grain & Seed Co., Inc., Springfield, Mo.
Logan Grain Co., Logan, Kansas.
William C. Loughlin & Co., San Francisco.

M

MacDonald Engineering Co., Chicago.
Manhattan (Kansas) Milling Co.
Manistee Salt Works, St. Louis.
Marianna Sales Co., Memphis.
Maritime Milling Co., Inc., Buffalo.
C. J. Martenis Grain Co., Inc., New York.
Martin's Feed Mills, Inc., New Paris, Ind.
R. A. Mayer Co., Los Angeles.
M. A. McClelland Co., Kansas City.
McKesson & Robbins, New York.
G. P. McNear Co., Petaluma, Cal.
Mebane Flour & Feed Mills, Mebane, N.C.
Merck & Co., Rahway, N.J.
Harold A. Merrill, Kansas City.
Merrimack Farmers' Exchange, Inc., Concord, N.H.
Midwest Dry Milk Co., Dundee, Ill.
Midwest Feed Manufacturers Assn., Kansas City.
Mid-West Mills, Abilene, Kansas.
Minnesota Linseed Oil Co., Minneapolis.
Montana Flour Mills, Great Falls.
Morrow Milling Co., Carthage, Mo.
Mowat, Wilson & Co., Detroit.

N

Nappanee (Ind.) Milling Co., Inc.
National Alfalfa Dehydrating & Milling Co., Lamar, Colo.
National Distillers Products Corp., New York.
National Food Co., Fond du Lac, Wis.
National Oats Co., E. St. Louis, Ill.
Nellis Feed Co., Chicago.
O. A. Newton & Son Co., Bridgeville, Del.
Nopco Chemical Co., Harrison, N.J.
North Carolina Granite Corp., Mount Airy, N.C.
Northern Star Mills, Chico, Cal.
Northwest Cooperative Mills, Inc., St. Paul.
Northwest Retail Feed Assn., Inc., Minneapolis.
Northwestern Distributing Co., Inc., Mason City, Iowa.
Norwich (N.Y.) Pharmacal Co.
Nutrena division, Cargill, Inc., Minneapolis.

O

Oberlin (Kansas) Milling Co.
Omaha (Neb.) Cold Storage Co., Inc.
Omega Machine Co., Providence, R.I.
Ontario (Cal.) Feed & Milling Co.
Oyster Shell Products Co., St. Louis.

P

Pabst Brewing Co., Milwaukee.
Pacific Processing Corp., Los Angeles.
Pacific Molasses Co., Ltd., San Francisco.
J. P. Parks Co., Kansas City.
Philip R. Park, Inc., San Pedro, Cal.
Park & Pollard Co., Inc., Buffalo.
Pawnee County Co-Operative Assn., Larned, Kansas.
Pay Way Feed Mills, Kansas City.
Richard K. Peek, Kansas City.
Penick & Ford, Ltd., Cedar Rapids, Iowa.
V. S. Peterson, Ames, Iowa.
J. F. Peterson-Biddick Co., Wadena, Minn.
Charles Pfizer & Co., Inc., Brooklyn.
Pillsbury Mills, Clinton, Iowa.
Pioneer Bag Co., N. Kansas City.
Prater Pulverizer Co., Chicago.
Publicker Industries, Inc., Philadelphia.
Puritan Manufacturing Co., Omaha.

Q

Quaker Oats Co., Chicago.
Wallace M. Quinn Fisheries, Pascagoula, Miss.
Quinn Menhaden Fisheries of La., Inc., Empire, La.
Quisenberry Mills, Inc., Kansas City.

R

Ralston Purina Co., St. Louis.
Raymond Bag Co., Middletown, Ohio.
Red Comb Mills, Inc., Wilmington, Del., and Red Comb Pioneer Mills, Inc., Marshall, Mo.
Roland L. Reinders, Elm Grove Wis,.
Earle T. Robertson Co., Inc., Knoxville, Tenn.
Riley Feed Co., Kansas City.
Jacob Rubinoff Co., Vineland, N.J. In memory of Fred J. Holtby, Minneapolis.
Russell-Miller Milling Co., Minneapolis.
Ryde & Co., Chicago.

S

Safety Car Heating & Lighting Co., New Haven, Conn.
Saint Regis Paper Co., New York.
Dr. Salsbury's Laboratories, Charles City, Iowa.
Sargent & Co., Des Moines.
Schenley Distillers, Inc., Cincinnati.
Schreiber Mills, St. Joseph, Mo.
Schultz-Baujan Milling Co., Beardstown, Ill.
J. H. Scott Co., San Francisco.
Scott County Milling Co., Sikeston, Mo.
Screw Conveyor Corp., Hammond, Ind.
Joseph E. Seagram & Sons, Louisville, Ky.
Security Mills, Knoxville, Tenn.
Sedan Seed House, Sedan, Kansas.
S & E Feed Co., Madison, Kansas.
Seedburo Equipment Co., Chicago.
Eugene L. Selders Co., Kansas City.
Seraphien Dossche, Dienze, Belgium.
Shafer - Haggart, Ltd., Vancouver, B.C.
Shawnee (Okla.) Milling Co.
Shea Chemical Corp., Baltimore.
Shellabarger Feed Mills, Inc., Salina, Kansas.
Shellbuilder Co., Houston, Texas.
Siler City (N.C.) Mills, Inc.
H. W. Skinner Grain & Lumber Co., Medicine Lodge, Kansas.
W. J. Small Co., Neodesha, Kansas.
Soft Phosphate Research Institute, Inc., Seaboard Sales Co., Philadelphia.
B. Sorrentini & Co., Inc., San Juan, Puerto Rico.
South Dakota Feed Manufacturers Assn., Sioux Falls, S.D.
Southland Feed Mills, Dallas, Texas.
Southwest Co-Operative Wholesale, Phoenix, Ariz.
Southwest Flour & Feed Co., Inc., Glendale, Ariz.
Southwestern Sugar & Molasses Co., New York.
Spartan Grain & Mill Co., Inc., Spartanburg, S.C.
Spencer Kellogg & Sons, Inc., Buffalo.
Springfield (Minn.) Milling Corp.
Stabilized Vitamins, Inc., Brooklyn.
Staley Milling Co., Kansas City.
Thomas W. Staley, Kansas City.
Standard Brands, Inc., New York.
Star Feed Co., Riverside, Cal.
Star Seed & Produce, Osborne, Kansas.
Jesse C. Stewart Co., Pittsburgh.
Theodore E. Stivers, Jr., Akron.
Stone Mountain Grit Co., Lithonia, Ga.
Sullivan, Inc., Ulysses, Kansas.
Sunset Feed & Grain Co., Inc., Buffalo.
Superior Feed Mills, Oklahoma City.
Supersweet Feeds, Division of International Milling Co., New Ulm, Minn.
Charles Swisher & Sons, Danville, Ill.

T

J. S. Templeton's Sons, Chicago.
Texas Farm Products Co., Nacogdoches, Texas.
Thompson-Hayward Chemical Co., Kansas City.
Tindle Milling Co., Springfield, Mo.
Tioga Mills, Inc., Waverly, N.Y.
Tommy Thompson Co., Fort Worth, Texas.
Topeka (Kansas) Mill & Elevator.
Tri-State Milling Co., Rapid City, S.D.
Dr. W. C. Tully, Springfield, Mo.

U

Ubiko Milling Co., Cincinnati.
Ultra-Life Laboratories, Inc., E. St. Louis, Ill.
Uncle Johnny Mills, Houston.
Union Bag & Paper Corp., New York.
United Co-Operative Farmers, Inc., Fitchburg, Mass.
United Mineral Co., Omaha, Neb.
Unity Feeds, Boston.
Universal Mills, Fort Worth.
Urbana Mills Co., Urbana, Ohio.

V

Valley Center Farmers Elevator, Valley Center, Kansas.
Van Camp Laboratories, San Pedro, Cal.
Van Waters & Rogers, Inc., Seattle.
Vitality Mills, Chicago.
Vitamins, Inc., Chicago.
Vit-A-Way, Inc., Fort Worth

W

Hiram Walker & Sons, Detroit.
Wallace & Tiernan Co., Inc., Newark.
Walsh Grain Co., Minneapolis.
Wamego (Kansas) Seed & Elevator Co.
Waterloo Mills Co., Waterloo, Iowa.
Ward Feed Co., Glen Ellyn, Ill.
J. R. Watkins Co., Winona, Minn.
Washington State Feed Assn., Seattle.
H. K. Webster Co., Lawrence, Mass.
J. F. Weinmann Milling Co., Little Rock.
J. H. Weip's Hatchery, Bancroft, Iowa.
R. E. Wendland Grain Co., Temple, Texas.
Werthan Foundation, Werthan Bag Corp., Nashville, Tenn.
Western Condensing Co., Appleton, Wis.
Western Grain Co., Birmingham, Ala.
J. S. West Milling Co., Modesto, Cal.
Western Yeast Co., Chillicothe, Ill.
White's Cash Feed Store, Garnett, Kansas.
Whitmoyer Laboratories, Inc., Myerstown, Pa.
Wilbur-Ellis Co., San Francisco.
H. R. Williams Mill Supply Co., Kansas City.
K. I. Willis Corp., Moline, Ill.
J. McKenny Willis & Son, Inc., Easton, Md.
Wilson & Co., Chicago.
R. S. Wilson Co., Los Angeles.
Winterscheidt Grain & Feed Co., Seneca, Kansas.
Wisconsin Milling Co., Menomonie, Wis.
Worley Mills, Portales, N.M.
L. C. Worth Commission Co., Kansas City.

Y

Yantic Grain & Products Co., Norwich, Conn.
Yieldmor Feeds, Piqua, Ohio.

Z

John W. Zipoy, Sioux City, Iowa.

Contributors of Equipment and Services for the Feed Mill Are Listed on Page 8

Contributors of Equipment and Services

A

Allis-Chalmers Mfg. Co., Milwaukee
Louis Allis Co., Milwaukee
American Pulley Co., Philadelphia
Arkansas Pallet Corp., Pine Bluff, Ark.
Armstrong Machine Works, Three Rivers, Mich.

B

Barnard & Leas Mfg. Co., Cedar Rapids, Iowa
C. O. Bartlett & Snow Co., Cleveland, Ohio
Bauer Bros. Co., Springfield, Ohio
Paul O. Berg, Fort Wayne, Ind.
Bin-Dicator Co., Detroit
Black, Sivalls & Bryson, Kansas City
Buffalo (N.Y.) Meter Co.
L. Burmeister Co., Milwaukee
Burrows Equipment Co., Evanston, Ill.
Butler Mfg. Co., Kansas City

C

California Pellet Mill Co., San Francisco
Clark Equipment Co., Battle Creek, Mich.
Columbian Steel Tank Co., Kansas City
Combs & Co., Kansas City
Continental Gin Co., South Birmingham, Ala.
Convair, Inc., Pittsburgh, Pa.
Corn States Metal Fabricators, Inc., Des Moines
Cosby-Hodges Milling Co., Birmingham, Ala.

D

Day Co., Minneapolis
Dings Magnetic Separator Co., Milwaukee
Dodge Mfg. Corp., Mishawaka, Ind.
Duplex Mill & Mfg. Co., Springfield, Ohio

E

J. B. Ehrsam & Sons Mfg. Co., Enterprise, Kansas
Eriez Mfg. Co., Erie, Pa.
Essmueller Co., St. Louis
Exact Weight Scale Co., Columbus, Ohio

F

Falk Corp., Milwaukee
Fairbanks, Morse & Co., Chicago
Dave Fischbein Co., Minneapolis
Fort Worth (Texas) Steel & Machinery Co.
Foster Pump Co., Inc., Brooklyn, N.Y.
Fulton-Sylphon Co., Knoxville, Tenn.

G

General Electric Co., Schenectady, N.Y.
General Mill Equipment Co., Kansas City, Mo.
Godshalk Sheet Metal Fabricators, Bangor, Pa.
Graham Transmission, Inc., Menomonee Falls, Wis.
B. F. Gump Co., Chicago

H

Hanna Engineering Co., Chicago
Hart-Carter Co., Minneapolis, Minn.
Hays Corp., Michigan City, Ind.
S. Howes Co., Inc., Silver Creek, N.Y.
Huss & Schlieper, Decatur, Ill.

I

Industrial Machinery Co., Fort Worth

J

Jacobson Machine Works, Minneapolis
Brown F. Jenkins, Kansas City
Jones-Hettelsater Const. Co., Kansas City

K

O. C. Keckley Co., Chicago
Kirk & Blum Mfg. Co., Cincinnati

L

Link-Belt Co., St. Louis
Longhorn Engineering Co., Fort Worth

M

Manning, Maxwell & Moore, Inc., Chicago
Materials Handling Equipment Co., Chicago
O. D. Milligan Const. Co., Manhattan, Kansas
Munson Mill Machinery Co., Utica, N.Y.

N

National Molasses Co., Oreland, Pa.
National Tank & Boiler Co., St. Louis
C. A. Norgren Co.
Nutting Truck & Caster Co., Faribault, Minn.

O

O'Brien Equip. Co., St. Louis
Oliver Corp.
Omega Machine Co., Providence, R.I.

P

Perkins Lumber Co., St. Louis
Prater Pulverizer Co., Chicago
Puritan Mfg. Co., Omaha, Neb.

R

Ralston Purina Co., St. Louis
Reeves Pulley Co., Columbus, Ind.
Richardson Scale Co., Chicago

S

Safety Car Heating & Lighting Co., New Haven, Conn.
Sauder's Feed Service, Tremont, Ill.
W. J. Savage Co., Knoxville, Tenn.
C. L. Schust Co., Inc., Fort Wayne, Ind.
Screw Conveyor Corp., Hammond, Ind.
Seaman & Schuske Metal Work Co., St. Joseph, Mo.
Seedburo Equipment Co., Chicago
Orville Simpson Co., Cincinnati
Southwestern Supply & Machine Works, Oklahoma City
Square D Co., Detroit
Standard Products Div., Fairfield Engineering Co., Marion, Ohio
Stearns Magnetic, Inc., Milwaukee
Stephens-Adamson Mfg. Co., Aurora, Ill.
Strong-Scott Mfg. Co., Minneapolis

T

Thomas Conveyor Co., Burleson, Texas
Thomas Truck & Caster Co., Keokuk, Iowa
Toledo Scale Co., Fort Wayne, Ind.

U

Universal Hoist & Mfg. Co., Cedar Falls, Iowa
U.S. Electrical Motors, Inc., Los Angeles

V

Viking Pump Co., Cedar Falls, Iowa

W

Wallace & Tiernan Co., Newark, N.J.
H. K. Webster Co., Lawrence, Mass.
Weeks Engineering Co., St. Louis
B. I. Weller Co., Chicago
Wenger Mixer Mfg. Co., Sabetha, Kansas
W. C. Wiedenmann & Son, Inc., Kansas City
K. I. Willis, Moline, Ill.

History and Development of Midwest Feed Production School

By Lloyd S. Larson
Executive Vice President
Midwest Feed Manufacturers Assn.
Kansas City

A four-column banner headline on the front page of Feedstuffs Oct. 28, 1950, announced the completion of program arrangements for the first Feed Production School sponsored by the Midwest Feed Manufacturers Assn. To be held on Nov. 27-29 of that year, the school was to consist of such topics as "The Feed Mill of Tomorrow," "Organizing and Training Personnel," "Handling Incoming Ingredients," "Bulk Handling," "Grinding Bins and Mixing Bins," "Air Handling and Dust Collecting," "Blending and Mixing Operations," "Molasses Handling," "Liquid Ingredient Handling," "Pelleting and Crumblizing," "Packaging," "Safety and Housekeeping," "Products Control and Planning" and "Inventory Control."

Lloyd S. Larson

Superintendents and operative personnel themselves were given the assignment of covering these topics. Such men as Jean P. Best, Burrus Mills, Inc.; Ray E. Rowland and C. A. Tolin of Ralston Purina Co.; Arthur Owen, MFA Milling Co.; Philip Murray, Pillsbury Mills, Inc.; John Landes, Gooch Feed Mills; J. W. Speers, General Mills, Inc.; Earl Hanson, Archer-Daniels-Midland Co., and Lawrence Hauskins, Nutrena Mills, Inc., got up before the first Midwest Feed Production School and discussed the operative problems listed above man-to-man.

It was the first time anything like it was attempted in the feed industry. Other obstacles which were overcome included the fact that the meeting had to be scheduled during Thanksgiving week. Also, many who were attending from the East had to skirt one of the worst blizzards on record. Some men who came to the Kansas City meeting from Buffalo flew by way of Winnipeg, Man.

Interest Clearly Evident

This determination to take part in the new project sponsored by a regional association was exhibited by industry representatives from throughout the U.S. The result of the first school was a big success. Paul Dittemore, who covered the meeting for Feedstuffs, described it this way:

"There is only one way to summarize the feed milling production school sponsored by the Midwest Feed Manufacturers Assn., Nov. 27-29, at the Hotel President, Kansas City. That way is to borrow the superlatives used by the motion picture industry and say that it was a smash hit, that it was terrific. The students said so.

"The men who planned and directed the three-day affair confessed amazement with the over-all success of their first attempt to do something toward helping formula feed plant superintendents with their production problems.

"Those men admitted privately that they had set as their goal a maximum attendance of 150 persons. When they finished opening the mail and following the publication of the announcement of the school in the Oct. 28 issue of Feedstuffs, there were more than 250 applications from formula feed mill superintendents, representatives of allied organizations, and others. Final tally of registrations showed 260 men from 30 states, Venezuela, Cuba and Canada.

"Question and answer periods were conducted the first two nights of the three-day school, and it almost was necessary to turn out the light to get the students to leave. All of them took notes during the lecture periods and it seemed that each of them had questions to submit to the panel of experts. The open forum sessions undoubtedly were the highlight of the affair."

The Men Responsible

Judging from the above description, it must have been a big success. We all know that the perserverance and guiding force of the late Jack Dean were behind this project which grew from just an idea into something of national prominence. And there were others, too, who helped to make the school a natural from the start. There were Elmer Winterscheidt, Winterscheidt Grain & Feed Co., Seneca, Kansas, and Maurice Johnson, Staley Milling Co., Kansas City, who were among the originators of the idea and introduced it to the association and its directors. There were John Heimovics, now with J. B. Ehrsam & Sons Manufacturing Co., Enterprise, Kansan, and James H. Burrell, St. Louis consultant, "principal" and "superintendent," respectively, who did much to arrange the program and guide it toward a successful conclusion.

(Contnlued on page 56a)

Production Efficiency Is Cornerstone For New Cosby-Hodges Feed Plant

By John F. Yarbrough

Maximum efficiency of feed production is the cornerstone on which the Cosby-Hodges Milling Co. has built its new feed mill in Birmingham, Ala.

One of the most modern mills in the country, the new Birmingham facilities are designed for speedy, accurate production with automatic operations maximized and direct labor held to a minimum. The latest in equipment, manufacturing design and processing are incorporated in the mill. These features create the greatest possible efficiency in material handling and feed processing.

The plant is of concrete and steel construction and is located on 35 acres of land just north of downtown Birmingham. The mill, with six floors, rises 130 ft. above the ground. The adjoining warehouse of concrete construction has 30,000 sq. ft. of floor space available for finished feeds.

A modern office building located adjacent to the new mill contains the general offices of the company's four-state operation. Demonstration and testing facilities, which will include numerous types of livestock as well as poultry projects, are now in the planning stage. These facilities, along with an air strip to accommodate company planes, will also be constructed on the mill site.

Push-Button Operation

The weighing of ingredients and mixing operations in the mill are carried out automatically by the push button batch system. These operations are electronically controlled from central control panels located on the first floor.

The plant can produce up to 75 tons of feed an hour in any form—mash, pellets, or crumbles.

Incoming ingredients are handled in bulk form. Finished feeds are moved to the warehouse by conveyor belt and then to warehouse, storage, or railroad car by fork lift trucks.

The accompanying condensed flow diagram shows how ingredients are handled and processed.

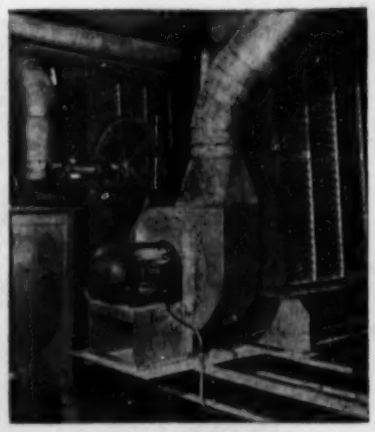
Inbound grain and other ingredients come to the plant in bulk form by rail or truck. At the truck unloading station the ingredients are dumped into the truck pit, passed over a magnet and carried on a drag conveyor to the elevator which lifts the ingredients to the sixth floor for weighing and cleaning.

Rail shipments coming in are classified into two categories — one for grain, the other for soft feeds. There are two inbound tracks, each with a capacity of 18 cars above the dump hopper. Adequate trackage is available for moving the cars through to reach the outbound track. Each railroad hopper has its own conveyor belt and elevator leg for handling material. The material is unloaded from the car by two men who use a double Webster power scoop, with an unloading capacity of 5,000 bu. an hour. After leaving the railroad hopper, material is conveyed on a belt where it passes over a magnet for the removal of any metallic material from the ingredients. The material is then elevated to the top floor where it is weighed with a Richardson bulk scale. After weighing, it is carried to the cleaners where all the grain passes over an S. Howes receiving separator. All soft feeds are passed over a Rotex cleaner and then into the storage bins by way of distributing conveyors.

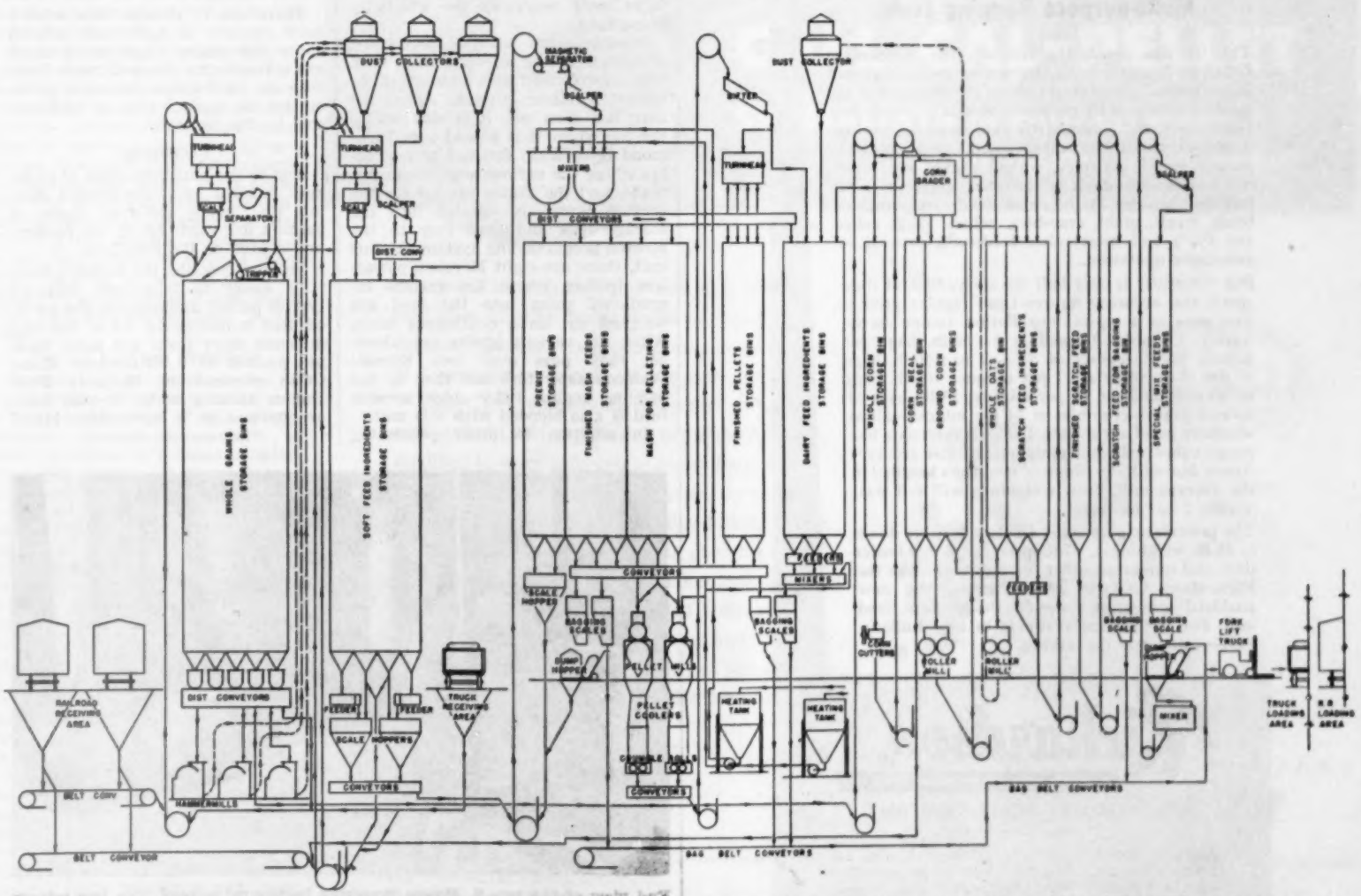
The ingredient storage area consists of 34 bins, with whole grain

This is an aerial view of the Cosby-Hodges Milling Co.'s new modern feed plant, showing the maintenance shop, left; mill and warehouse, center; and office building adjacent to the mill. The plant is located on a 35-acre tract of land.

Here is one of the five Richardson Duplex scales, with V-belt bag conveyor, in the Cosby-Hodges plant.



Two of the four California Pellet Mill cooling towers. Approximately 35% of Cosby-Hodges' line of Jazz feeds are produced in pellet or crumble form.



Here is a condensed flow diagram of the mill operations at the new formula feed plant of Cosby-Hodges Milling Co. at Birmingham, Ala. This diagram was prepared by Paul Berg, consulting engineer, Fort Wayne, Ind., who designed the plant.

Here is a view of part of the distribution system in the mill for mixed feeds.

storage capacity of 69,200 bu., or the equivalent of 35 cars. Bins for soft feed ingredient storage have a capacity of 56 cars. The bins are 75 ft. in height and 15 ft. in diameter.

Materials in the grinding bin go to four Jacobson hammer mills located in the basement. After grinding, the materials is elevated back to the top for storage in operating bins.

Liquid storage consists of four outside storage tanks of 10,000 gal. capacity each. Two 1,000-gal. working tanks are located in the plant basement where the liquids are prepared for the mixing operation.

Mixing System

Mixing operations are carried out by two operators at a central control panel on the first floor in an air-conditioned room. It requires two men to operate the four Fairbanks dial scales and 45 selector push-buttons for the control of dry ingredients. As the operator pushes an ingredient selector button, an electric current activates an air solenoid valve which opens an ingredient gate above the scale.

Ingredients are weighed out in three-ton batches in hopper scales which are comprised of four independent scales. After the formula has been weighed out, the feed is then re-elevated to the top where it passes over magnetic pulleys, scalpers, and then into a three-ton S. Howes batch mixer. Quality control is implemented by printing the weights of each ingredient on a tape automatically as it is weighed by the operator. This gives an accurate check on the formulation of each batch of feed.

In addition to the two S. Howes three-ton capacity mixers, an independent batch mixer is available for mixing small quantities or special feed formulations. It operates on the same basic principle as the larger units.

Another segment of the plant's mixing operations is a molasses mixer for dairy feeds with high molasses content. This unit is also used in mixing horse feeds containing cracked corn and crimped oats. These ingredients are added to the molasses and the pre-mix which includes all ingredients necessary for a quality horse feed.

Another part of the processing operation is the scratch feed unit. The scratch feed unit consists of six Sprout-Waldron cutters. After the corn has been cut, it is elevated to the top where it is passed over Richmond Gyro-Whip cracked corn graders where the various separations are made, and the grains headed for the scratch units are carried into the storage bins and then over to the scratch proportioning system. At this unit, there are eight Merchen powerless feeders where the various ingredients going into the feed are weighed out on a continuous basis. After the various grains are blended, they pass over two Sprout-Waldron aspirators and then to the bagging scales. Baby chick scratch feed is also blended with this unit.

In addition to other processing

Here is one of three Bar-Nun sifters used in scalping pellets and crumbles in the Cosby-Hodges plant. At the rear is a bucket elevator with drag coveyor.

equipment that has been mentioned above, an oat steamer with a capacity of 9,000 lb. an hour is located directly above a double stand of Sprout-Waldron oat crimpers where all the oats are crimped, then re-elevated into bins for use in feed.

Pellet Process

The pelleting operation is comprised of four California 75 Century pellet mills. Above the mills are nine pellet bins with a capacity of 24 tons each. After the feed has been pelleted, it goes into California coolers, then either into crumble rolls or bypasses crumble rolls where it is re-elevated to the top and scalped over B. F. Gump sifters. After scalping, it is carried to the storage bin above the packing scales.

Finished Feed Storage

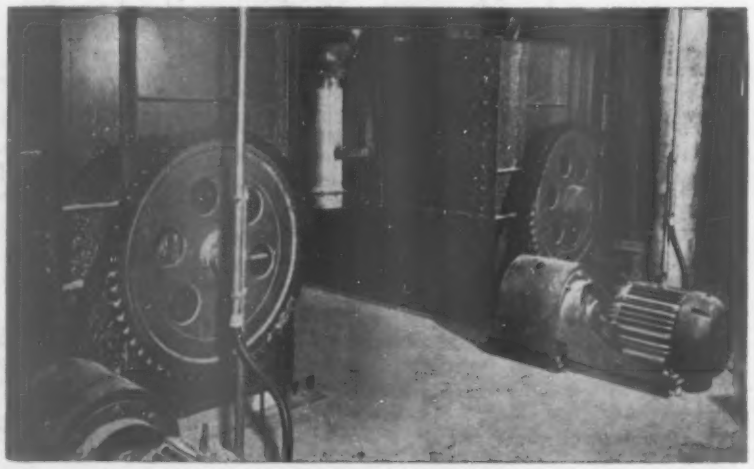
There are 71 storage bins, with a total capacity of 1,285 tons, located above the scales. Eighteen of these are set aside for finished mash feeds that can be fed into numerous packers for the various sizes of packages sold by the company.

Packaging

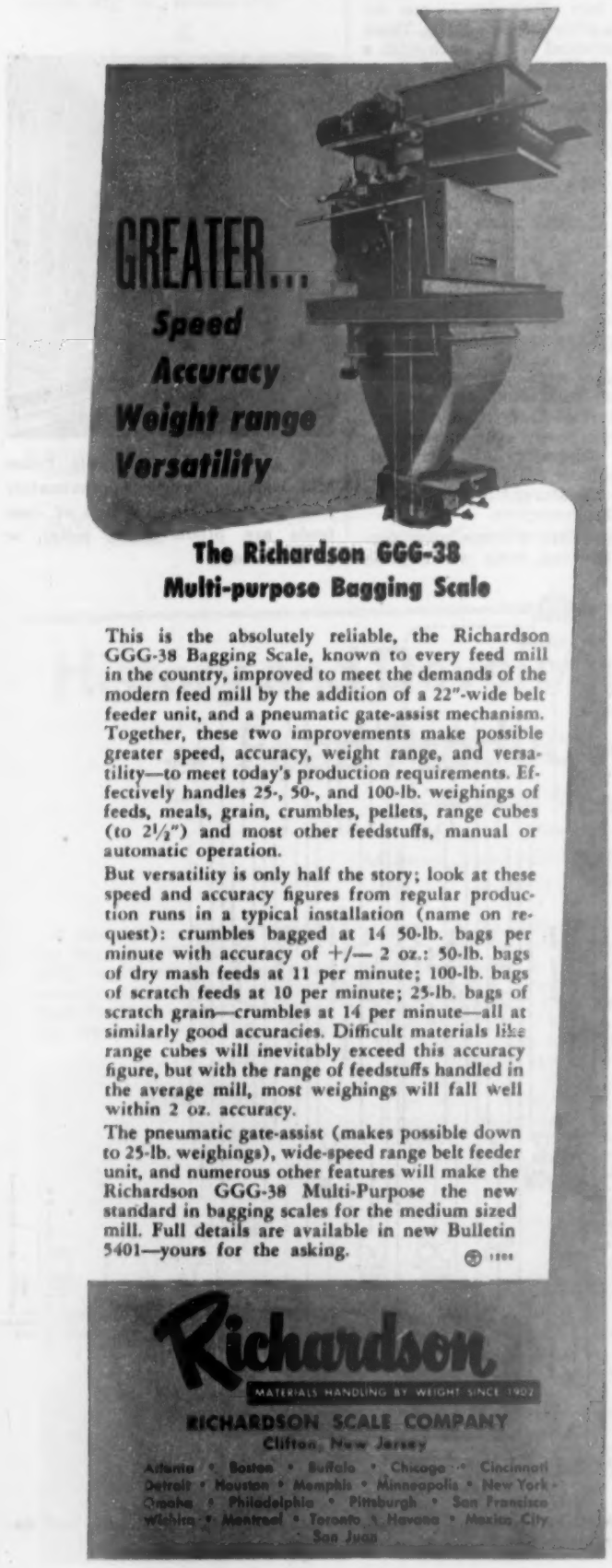
Due to the numerous sizes of packages handled by Cosby-Hodges Milling Co., many different types of packers are used. All of the packers are located on the first floor.

To best describe the packing floor, it is easier to take each different type of packer and describe the method used in packaging. All of the high molasses dairy feeds and horse feeds are packed on a Richardson Model GG38 combination Molasses Feed Duplex sacking scale. Scratch feeds are packed on a Richardson Model

(Continued on page 52a)



End view of the two S. Howes three-ton horizontal mixers. The two mixers operate continuously—while one mixer blends its contents for six minutes, the other is being emptied and refilled.



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But versatility is only half the story; look at these speed and accuracy figures from regular production runs in a typical installation (name on request): crumbles bagged at 14 50-lb. bags per minute with accuracy of +/— 2 oz.: 50-lb. bags of dry mash feeds at 11 per minute; 100-lb. bags of scratch feeds at 10 per minute; 25-lb. bags of scratch grain—crumbles at 14 per minute—all at similarly good accuracies. Difficult materials like range cubes will inevitably exceed this accuracy figure, but with the range of feedstuffs handled in the average mill, most weighings will fall well within 2 oz. accuracy.

The pneumatic gate-assist (makes possible down to 25-lb. weighings), wide-speed range belt feeder unit, and numerous other features will make the Richardson GGG-38 Multi-Purpose the new standard in bagging scales for the medium sized mill. Full details are available in new Bulletin 5401—yours for the asking.

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FEED PREMIXING

Formula Structure, Systems, Equipment, Operations

By Loren V. Burns

Consultant in Feed Technology
Manhattan, Kansas

How critical are premixes? What is the best method of premixing? What equipment do we need to make a good premix? These questions are heard everywhere among feed manufacturers who make their own premixes.

Premixes are almost universally necessary in modern feeds. Practically every feed contains important vitamin supplements and micro-nutrients which must be uniformly distributed in the mix. Many feeds contain drugs which require critical dispersion. Hormones, which will soon enter the feed picture, must be held within extremely close tolerances. Premixing is the most practical system to safely and dependably disperse these micro-nutrients in a feed.

Premixes are becoming increasingly critical. The tolerance limits for micro-nutrients which were acceptable a few years ago no longer meet the needs of a modern feed. A few of our modern feeds can still be manufactured without premixes, or with a very crude premix, but most feeds are becoming so critical that they tax the ability of plant personnel and equipment. Very often poor field performance can be traced directly to poor dispersion or improper addition of micro-nutrients. Precision compounding and precision mixing are the rule of the day, and the requirements are not going to ease. New developments in nutrition and feeding practices are continually forcing tighter tolerances. The alert feed manufacturer is reviewing his premixing practices and testing his premixing equipment to be sure he can meet today's standards.

The answers to many questions regarding premixing can only be determined on an individual basis. Each area, each plant and each formula present individual problems which must be resolved. However, all premixing operations have certain points in common, and almost every operation may be broken down into three fundamental steps: formulation, compounding and mixing. In practice it is not this simple; a host of other problems arise in carrying out these steps and in producing a feed which gives optimum performance in the field.

Premix Formula Structure

Formulation of premixes lies in the province of the nutritionist and is beyond the scope of this article. However, formulation reflects in plant requirements because it determines the number of premixes and their basic structure. Many minor compromises in cost and nutritional balance are necessary to hold the number of premixes to a minimum, yet adequately meet field requirements. Premixes containing sensitive vitamins or combinations of vitamins and minerals usually require special consideration in formulation and production to avoid interactions and loss of nutritional factors. If your own personnel are not well informed in this specialized field, it is wise to consult an expert before you risk poor results.

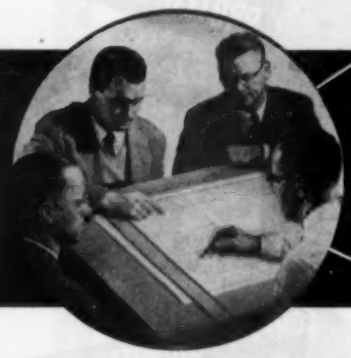
Many manufacturers find that multi-stage premixes give the best results with many of the micro-nutrients and drugs used today. Greater flexibility results, too, if the vital ingredients are incorporated in individual basic premixes and later combined into specialized premixes. Typical basic premixes might include a B-vitamin premix, a vitamin A premix, a vitamin D premix, a trace mineral premix and drug premixes. Hormone premixes may soon have to be added to this list. From these basics, combined with other ingredients, are manufactured typical production premixes such as starter-grower premix, layer-breeder premix, various hog premixes, a ruminant premix and the specialized premixes such as those for calf feeds and dog food.

Premix formulation and design is primarily the nutritionist's problem. Assuming that he has done his job well, the production man is faced with the problem of meeting nutritional and product standards with the men and equipment he has available. Many feed mills have equipment which can produce good premixes if properly used, but in most operations of any size it is preferable to install a separate small unit specifically designed and used for premixes.

There is seldom any reason to duplicate grinding or screening facilities in a premix unit unless you want to use ingredients of controlled particle size for very precise mixing operations. Likewise, premix packaging for plant use is a bulk operation of relatively low volume which can be accomplished with simple equipment. Thus, you really need only compounding (weighing) and mixing equipment for a good premix operation. A batch unit is the most economical for all but the largest operations, but both batch and line

Loren V. Burns

Planning to Build? Expand? Modernize?



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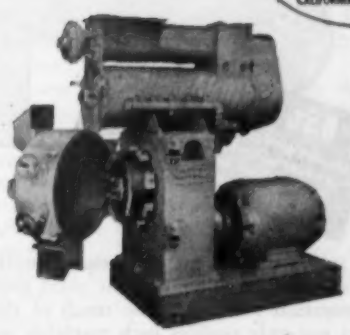

CALIFORNIA 100 HP "CENTURY" PELLET MILL, shown with 2-way hinged pellet chamber open for easy access to die and rolls.

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operations can be designed to give excellent precision if the right type of equipment is used.

Premixing Equipment

Compounding (the proper proportioning of the various ingredients) is a vital part of premix manufacture and must be accurately carried out. The old method of measuring by volume is obsolete; filling a container to a particular level does not give an accurate measure of an ingredient as too many variables such as density and packing effect are involved. For bulk and carrier ingredients a hopper scale or a platform scale of 500 to 2,000 lb. capacity is required for batch operations. Dial scales are preferred as they are easier to read and eliminate many operator errors. A bench scale of 50 to 100 lb. capacity is desirable for the many ingredients which are added in 5 to 50 lb. units, although a 500 lb. platform scale may be used for this purpose as well as for carrier ingredients. If concentrated micro-nutrients are used, an accurate small scale is essential; a triple beam balance of 5 lb. or 2 kilograms capacity is a satisfactory and inexpensive scale, but it must be protected from dust and shock. A Torsion balance is more rugged but much more expensive. For weighing the various ingredients in small amounts, color coded and labeled pails or containers eliminate operator error and facilitate checking each ingredient into the mixer.

Compounding is only as good as the ability and integrity of the man assigned to the operation. The man at the scales determines the quality and cost of your premix; be sure you have the right man for the job.

If you are producing a large volume of premix, it may be profitable to install a line for proportioning ingredients. Modern gravimetric continuous weighing equipment can be obtained to operate at high accuracy. Automatic controls and checks are available which reduce errors to a minimum in a properly designed system. Although initial investment is high and skilled maintenance is required, these factors are offset by low labor costs and virtual elimination of operator error. When used in conjunction with continuous mixers incorporating time dispersion or back mixing a line system can be very satisfactory and result in low production cost and a superior product.

Mixing is the other critical phase of premix production. Good dispersion can be obtained in most types of mixers with proper operation and the right type of ingredients, but feed premixes use so many different types of ingredients that many mixers do not have the versatility required.

Vertical mixers are not recommended for premix production as their mixing characteristics do not meet the critical requirements. Horizontal ribbon mixers are the most versatile of the inexpensive types and can give good results if properly used. Mixers of the double cone and twin shell type are excellent for fine, dry ingredients but are not efficient with moist, sticky or liquid ingredients. The author has found the mulling type mixer superior to all other commercially available types for production of feed premixes. Extensive experience in premix production coupled with laboratory tests and experimental comparisons of mixing efficiency have proven this mixer to be versatile and reliable, giving excellent dispersion of all types of ingredients in minimum time.

Balancing Mixer Capacity

For small batch premix operations a 20 cu. ft. capacity (500 lb.) horizontal ribbon mixer is probably the best choice if the cost of the unit must be held to a minimum. In premix operations batches of over 1,000 lb. are tricky when mixed in horizontal mixers; premixers of greater capacity should be used with caution and only after extensive tests have proven their uniformity and reliability under all conditions.

The author considers that a minimum of 50 lb. of premix should be used per ton of product to insure good dispersion in the average production mixer. To insure thorough dispersion in the average horizontal batch mixer, a premix should be mixed at least 12 minutes; this results in a total batch cycle of approximately 20 minutes. On this basis, a 20 cu. ft. premixer could service a capacity up to about 20 tons of mixed feed per hour even when multistage premixes are used. In practice, if daily production averages over 100 tons per day, it is profitable and desirable to install a more efficient premix system.

A mulling mixer of 50 to 60 cu. ft. capacity, operating on a batch cycle of 30 minutes with about 20 minutes mixing time, could easily service a plant capacity of 50 tons per hour even with multi-stage premixes. If liquid additives and basic premixes are used extensively, the capacity serviced might be reduced to 40 tons per hour. When larger capacities must be serviced, a tandem mixer installation of the mulling type is very economical as the same crew can service two mixers operating on a 30 to 40 minute batch cycle if adverse conditions are not encountered.

If plant capacity is over 50 tons per hour, serious consideration should be given to line premix production and bulk handling of premixes. The large initial investment in such a system is offset by its operating economies and its freedom from operator error.

Organizing Premix Operations

Regardless of the type of equipment, standard operating routines are essential to produce uniform premixes. A system of inventory control for ingredients is particularly important in checking premixer operations. The order of addition of ingredients is important with many types of mixers; only experience and testing can establish this optimum order. Determination of optimum mixing time is very important; none of the simple check methods are precise enough for today's conditions, thus laboratory tests must be used for this purpose. The variance technique described in the chapter on industrial mixing in Herdan's book, "Small Particle Statistics," is one of the simpler and more practical methods for determining optimum mixing time.

A mere collection of machines does not constitute a good premix system. Men, materials, machines and methods must be coordinated. Even the best mechanical design is inadequate unless nutritional and operational requirements are thoroughly considered. Process engineering, systems engineering and human engineering are just as vital as mechanical engineering in producing an accurate and uniform premix for modern applications.

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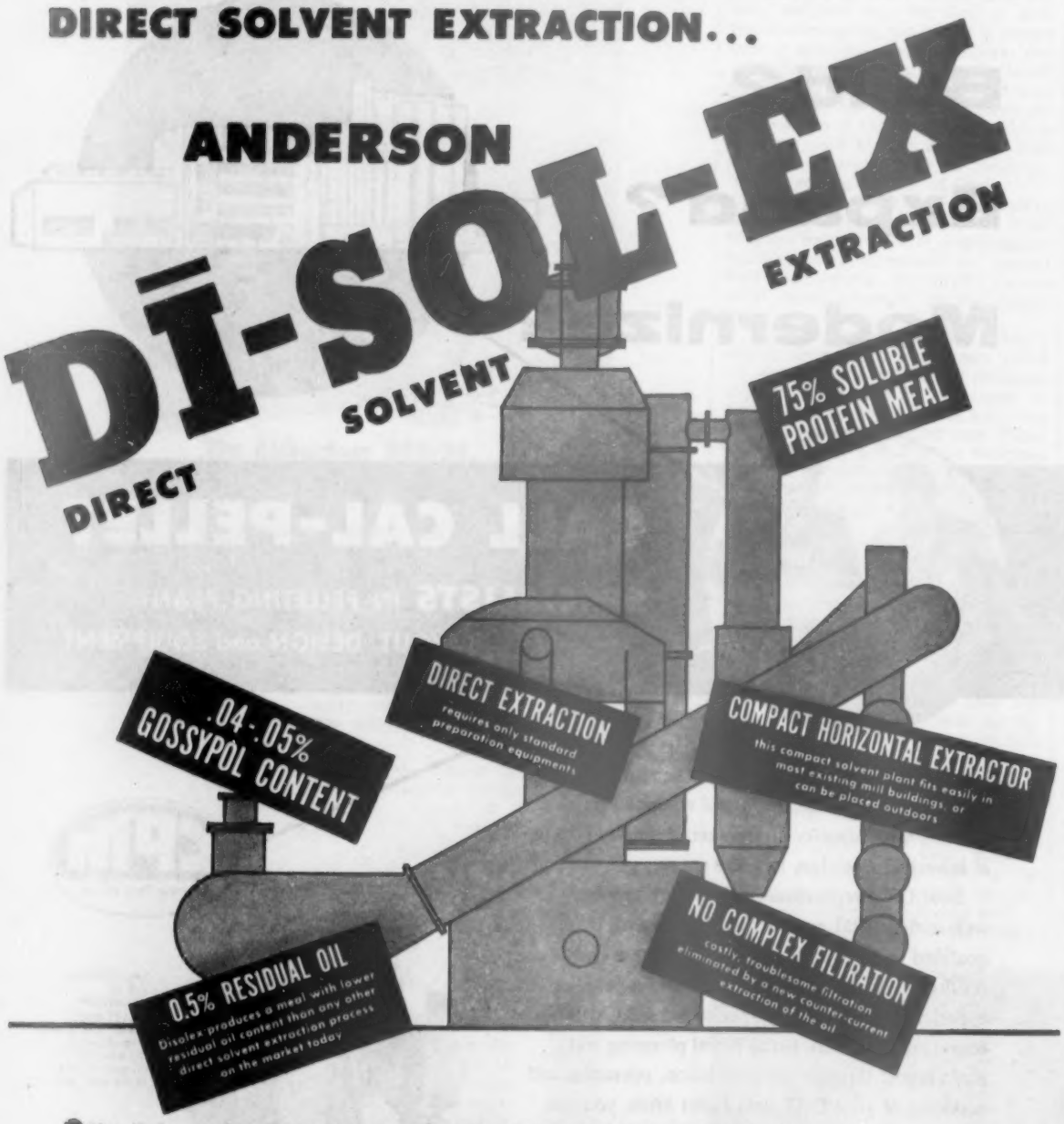
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Farm Bureau Services
Lansing, Michigan
Kendall Co-op. Exchange
Kendall, Wisconsin
Ixonia Farm Products
Ixonia, Wisconsin
Westby Farmers Union
Westby, Wisconsin
Tow Line Feeds
Ionia, Michigan
Hanes Feed Co.
Amherst Junction, Wis.
Handy Electric Mills
Allegan, Michigan
Wisconsin Farmco Service
Dodgeville, Wisconsin
Bader Feed Mill
Mt. Pleasant, Michigan
Wisconsin Farmco Service Co-op.
Winneconne, Wisconsin
Blue Ribbon Mills
Lawler, Iowa
Swanson Farm Store
Princeton, Wisconsin
Jefferson County Co-op. Service
Jefferson, Wisconsin
Waverly Hatchery, Feed & Grain Elev.
Waverly, Ohio
Reedsburg Equity
Reedsburg, Wisconsin
George McIntyre & Son
Millington, Michigan
Dowagiac Farmers Co-op. Assn.
Dowagiac, Michigan
Forest Grain & Supply
Forest, Ohio
Hazelrigg Grain Co.
Hazelrigg, Indiana
B. N. Stone Feed Co.
West Concord, Minnesota
Washington Service & Supply
Monticello, Wisconsin
Highland Producers Assn.
Highland, Michigan
Quality Feed Supply
Marine City, Michigan
H. M. & G. Grain Co.
Fowlerville, Michigan
Ypsilanti Farm Bureau
Ypsilanti, Michigan
Kalona Elevator Co.
Kalona, Iowa
Lone Rock Mill
Lone Rock, Wisconsin
Cooperative Elevator Co.
Pigeon, Michigan
Michigan State College
Lansing, Michigan
Werner Mill Co.
Windom, Minnesota
Ransomville Implement & Supply
Ransomville, New York
Croswell Milling Company
Croswell, Michigan
Acre's Elevator
Otter Lake, Michigan
State Prison Southern Michigan
Jackson, Michigan
Economy Feed Mill
Guttenberg, Iowa
Elkland Roller Mills
Cass City, Michigan
Newton Co. Farm Bureau
Ade, Indiana
Dayton Grain Co.
Dayton, Indiana
Spencer Co. Farm Bureau
Lamar, Indiana
Spencer Co. Farm Bureau
Chrisney, Indiana
Lafayette Farm Supply
Darlington, Wisconsin
Fairfax Grain & Supply
Fairfax, Minnesota
Leo J. Fleugel
Rosemount, Minnesota
Goodman Feed Mill
Wayne, Michigan
Sunfield Farmers Elevator
Sunfield, Michigan
Cutler-Dickerson
Hudson, Michigan
Dola Farmers Exchange
Dola, Ohio
Huntington County Farm Bureau
Huntington, Indiana
Hoeis Flour & Feed
Plato, Minnesota
McCoy's Feed, Inc.
Churubusco, Indiana
Argyle Feed & Seed
Browntown, Wisconsin
Farmers Elevator Co.
Waupun, Wisconsin
West Branch Elevator
West Branch, Michigan
Bender Feed Mill
North Freedom, Wisconsin
Max Kantz
Green Lake, Wisconsin
East Chilliwack Fruit Growers
Sumas, Washington
Jefferson County Farm Service
Jefferson, Wisconsin
Minor Walton Bean Co.
Charlotte, Michigan
Star City Elevator Co.
Star City, Indiana
Johnston Elevator
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W. T. Richards Hatchery
Stewart, Minnesota
Elkhart County Farm Bureau
Goshen, Indiana
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Eldorado Feed & Fuel
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✔ Your mill operator can select the desired screen size instantly, without stopping the mill . . . without leaving the work floor and with a minimum of effort. A simple push or pull on one of three control rods changes to a fine, medium or coarse screen . . . the Bryant Mill changes screens to assure your customer of getting the desired granulation.

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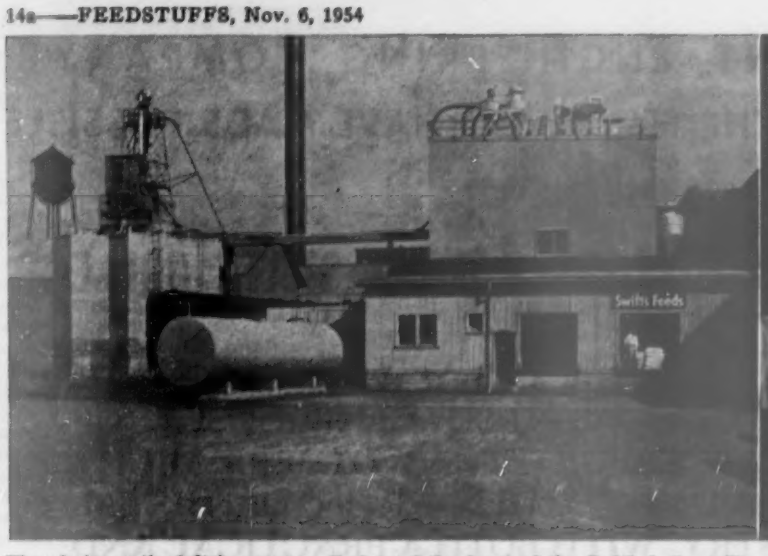


The photo on the left is an over-all view of the front of the Swift & Co. mill. Storage bins and dust system units are on the left. The company's meat packing plant is shown in the background, right. Left to right in the second photo are seen the open sink for adding pre-mixes; the elevator and dust collector line leading off the top of it, and a ribbon type, enclosed chain-drive Sprout-Waldron mixer. Next is the platform leading to the formulating hopper and scale. In the right rear is the hammermill.

Swift & Co. Builds Modern New Country-Type Formula Feed Mill

By Howard F. Watkins

Quality control and increased efficiency in formula feed production are uppermost in the operation of the new Swift & Co. feed mill at North Portland, Ore. The plant, though hardly completed, is gaining recognition as one of the most efficient country-type mills in the Pacific Northwest.

Not to be overlooked are the safety features. An extensive, four-unit, dust collecting system is incorporated into the mill's operation.

A major feature of this mill, though not shown on the accompanying flow diagram, is the provision for the addition of animal fat to the feeds. Fat is playing an increasing role in the manufacture of formula feeds, and this mill is assured of ample supplies of fresh, quality animal fat for use in its feeds. There is a direct pipeline from the fat source, the company's North Portland meat packing plant, to the mixer in the mill proper. Fresh meat scraps and tankage are also readily available from the packing plant. This is another factor which aids in the manufacture of quality feeds—the efficient handling of ingredients and cost control.

Liquid molasses is brought to the mill by tank car and stored in an above-ground tank. Proper proportions are metered direct to the molasses mixer. Molasses not taken by the meter returns to the storage tank by means of a continuous flow system.

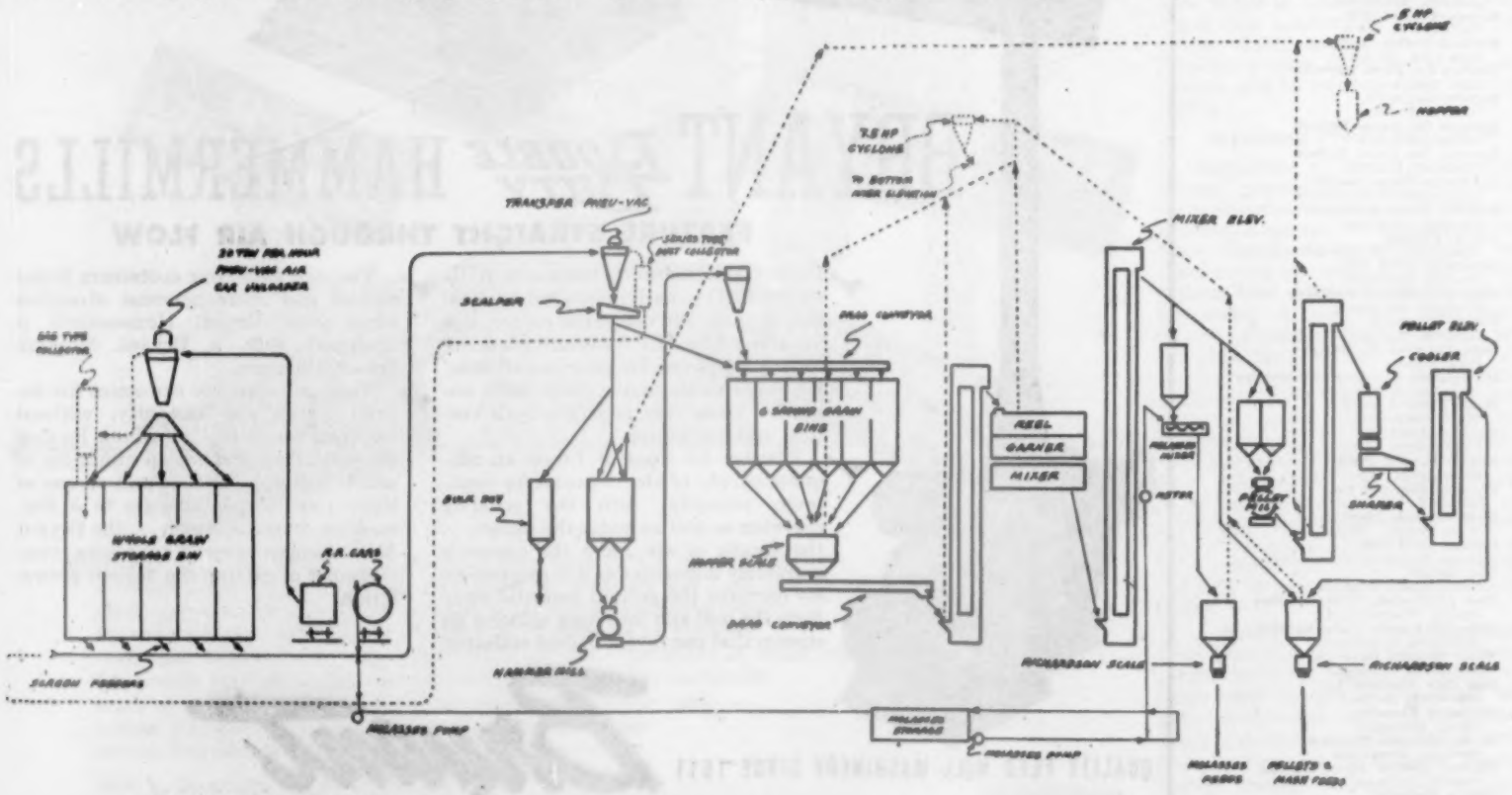
The mill is also equipped with a separate unit for preparing the all-important vitamin and other premixes which are regularly used in the manufacture of all feeds. This adds to the precision and accuracy of the mixing and aids in maintaining high standards of quality in the feed produced.

A Sprout-Waldron Pneu-vac air conveying system is used for unloading bulk grain from cars and transporting it to the hammermill hoppers inside the mill.

John W. Weymer (hatless), district manager and J. E. Davis, mill foreman, are inspecting pellets coming through the Sprout-Waldron cooler. The prominent elevator (right center foreground) carries mixed feeds. The bin in right foreground is one of the ground grain bins over the formulating scale. The large pipe in the left foreground is part of the dust removal system.

Whole grain is drawn from the bulk cars to an overhead distribution system above five self-emptying, steel-cone-bottomed storage bins. After being pulled into the collector above the bins, the grain is discharged into any one of them by means of a turnhead unit. This unit is controlled by an operator at ground level.

The grain feeds out of the bottom of the bins into the Pneu-vac air con-



Flow Diagram of Swift & Co. Feed Mill at North Portland, Ore.

Howard F. Watkins

AUTHOR — Howard F. Watkins started with Swift & Co. in 1916 at Kansas City. Subsequently he was located in New York, New Jersey, Iowa and now Chicago. He moved to Chicago in 1939 and it was his job to develop the mixed feed, concentrate and mineral supplement business. He was instrumental in helping develop Swift's feed plants, the most recent being the one at North Portland.

veying unit that is used for carrying the grain to the mill or for transfer to another storage bin. A valve on the outside of the bins controls this distribution.

Whole grain, as it is brought into the mill by the air system, is dropped into a collector above the hammermill. Vegetable proteins can be unloaded and brought into the mill through this same system. After the grain drops into the collector, the air passes on through a series of dust collector tubes and continues back to the outside storage bins for moving more grain.

Both the air systems for unloading bulk cars and for moving grain from storage into the mill are used in the dust collecting systems also. The storage tank-to-mill system is continuous; the system drawing grain from the car-to-storage-tank unit expels its air through a bag type dust collector on top of the bins.

Whole grain dropped into the collector from the air conveyor system passes through a scalper and on into two bulk bins over the Sprout-Waldron hammermill. After grinding, it is blown into the collector over the formulating bins.

Vegetable protein is handled through the same collector and scalper. It can go to any one of the six formulating bins or can go into the bulk bin shown alongside the two feeding the hammermill.

Ground grain from the formulating bins is gravitated to the hopper scale. A manual control is provided to open any one of three valves to drop the mixture onto the drag conveyor, then to the bucket elevator that carries it to the reel. It is at this point that bagged ingredients are added through an open sink. Here too, a direct line has been added to the mill's dust collecting system. From the reel the mixture goes through a garner (holding box) and then into a ribbon-type Sprout-Waldron batch mixer.

From here gravity takes it to the bucket elevator that delivers it to one of three places:

1. Direct to the molasses mixer.
2. Direct to the mash bagging hopper.
3. To the pelleting hopper.

Feeds going into the molasses mixer are then dropped directly into a hopper above the automatic Richardson sacking scale.

When making pellets, the mixed feeds are dropped into one of two bins above the Sprout-Waldron pellet mill. They are pelleted, fed into a bucket elevator, and moved through the pellet cooler. If they are to remain as pellets, they by-pass the crumblizer and go through a shaker which eliminates fines, then into the elevator to the scale hopper. If pellets are to be crumbled, they go from the cooler through the crumblizer, then follow the same process as for pellets.

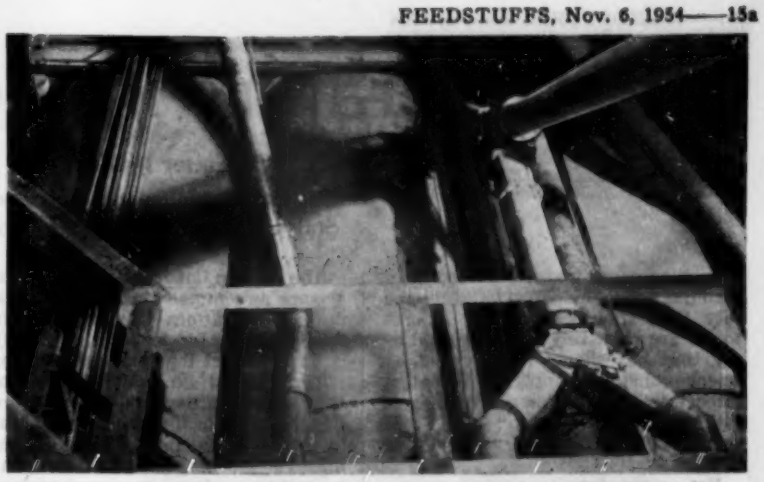
Most of the more than 40 feeds produced in this mill are put into 50 lb. paper bags through Richardson bagging scales. Even though these bags are automatically scaled, constant test checks are made to insure accurate weights.

There are four separate dust collecting units in this mill:

No. 1 is a bag-type collector unit that operates in conjunction with the bulk car unloading and whole grain storage.

No. 2 is a series-tube system drawing from the whole grain in the first collector inside the mill proper.

No. 3 operates from a 5 h.p. cyclone unit that pulls dust from the hammermill hoppers, and from both the bottom and top of the elevator carrying pellets to the cooler.



The ground grain bins are in the background of this photo. The pair of pants in the lower right lead to the hoppers over the hammermill, and the single line branching off goes to the vegetable protein bin.

No. 4 is a 7.5 h.p. cyclone unit with a direct pickup off the hopper

(Continued on page 51a)

Here's what's behind users reports that

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HARD-FACED HAMMERS and HAMMER CLUSTERS *

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Feed manufacturers across the nation have reported two to ten times longer hammer life with Pacal Hammers. Metallurgical experience and know-how makes this outstanding performance possible

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The Laboratory in the Feed Mill

By Elmer Modeer
Laboratory Director and Nutritionist
Staley Milling Co., Kansas City

Elmer Modeer

A surprising feature of the feed manufacturing industry today is the fact that analytical control laboratories are relatively few in an industry that has shown itself unusually science-minded in applying the latest discoveries in nutrition and other animal sciences, and progressive in materials handling and other production problems.

Yet, aside from very large companies, and the northeastern area, the feed laboratory is the exception rather than the rule, in an industry that, relative to industry in general, is prosperous, optimistic and progressive.

The reason laboratories have not become as common a part of feed production operations as they have in flour milling, for instance, is partly due to the fact that management has not developed an understanding of their potentialities, and the pressure for efficiency has not been the factor in the past that it is rapidly becoming. The other principal factor has been the scarcity of personnel trained both in the profession of chemistry and the technology of the feed industry. The new Kansas State Feed Technology School will perform a great service in providing this personnel for the industry.

A characteristic of the feed industry is that the process of manufacturing feed does not, relatively speaking, add to the raw materials cost to the extent of most industries. A hundred dollars worth of steel going to a watch factory will produce thousands of dollars worth of finished products; the same amount of feed ingredients will produce, at most, about $120 to $140 worth of finished products. Saving a dollar per hundred in raw materials would be insignificant to the watch maker; the same saving to the feed manufacturer would be tremendous.

The feed industry today is not selling ingredients, such as soybean oil meal or wheat gray shorts, as examples, but nutrition, measured in terms such as protein, phosphorus or riboflavin; and the only way to measure these factors is by laboratory analysis. A properly used laboratory is one of the greatest single factors for lowering materials cost, while still maintaining nutritional quality in feeds. Yet a tremendous proportion of the tonnage of formula feeds is made and sold today on pencil-and-paper calculations, a practice that is costly to the producer and risky for the consumer.

It is hard to understand how organizations that diligently pursue and apply every materials handling and labor saving idea in production, run their offices with the most modern and complex accounting machinery, and yet accept—and sell—the factor that accounts for more than two thirds of the cost of the finished product almost entirely on guesswork.

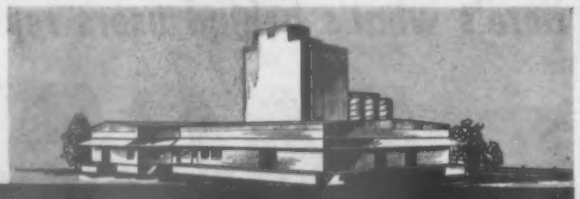
What should a laboratory do in the feed mill? The first point to be realized is that there is nothing automatic about results from a laboratory. Unless the information obtained is put to use by management, it isn't worth anything. A laboratory is of value only to the extent to which the laboratory data is actually applied. This is a function of management, but it is also a responsibility of the chemist to educate and cooperate with management in applying the information. If the answer "yes" cannot be given to the question "Will we be able to do something on the basis of this test?" then the particular test will be a sheer waste of time and money. Undoubtedly, however, a great deal of analytical data in many companies leaves the laboratory and passively fills file drawers in the office because of habit.

Types of Data

For convenience of description, laboratory data can be classed as "police," "pattern" or investigational. The most practical tests made by the feed laboratory are those termed "police" checks. These are determinations that can be made quickly enough to form a basis for acceptance of ingredients or release of finished feeds. On ingredients, the protein test looms large, with such individual factors as fiber on millfeeds, total solids in molasses, carotene in alfalfa, or free fatty acid in meat and bone scraps, as examples. On the basis of such routine, quickly performed tests, the laboratory can act not only as a quality screen but also as a guide to the buyer for acceptable sources of supply and as an aid in setting up specifications.

"Police" checks on production are especially important. Analysis for protein, molasses content, urea, moisture, drugs, such as nitrophenide, nitrofurazone, sulfaquinoxaline or arsanilic acid, can all be completed be-

(Continued on page 51a)



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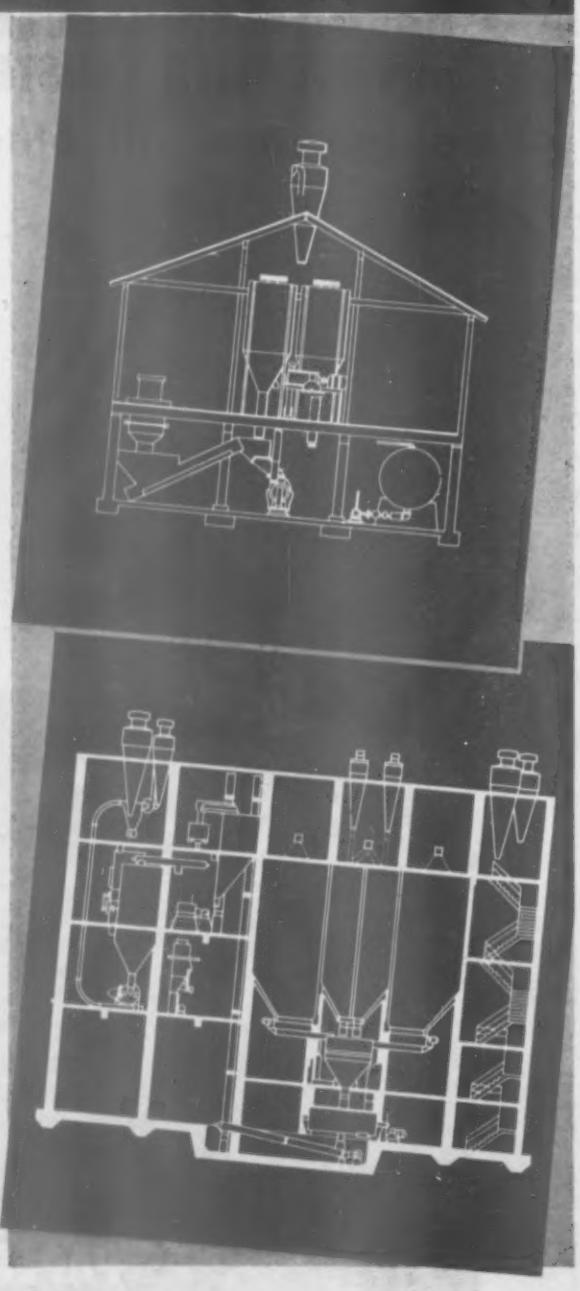

Your ONE BEST guide to complete feed mills will be found at Sprout-Waldron. And why not? Where else can you find—in one organization—the same wealth of experience . . . the same aggressive search for the new, the better . . . the engineering and manufacturing facilities . . . the same depth of product line? Where else can you find such unified responsibility?

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At Sprout-Waldron there can be found plans of mills from small crossroad-size to large commercial operations—mills that have proved their worth. In the files are plans incorporating bulk storage of ingredients, bulk delivery of feed, continuous batch mixers with valve box hopper scales and with automatic push-button controls.

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Randolph Mobile Drier

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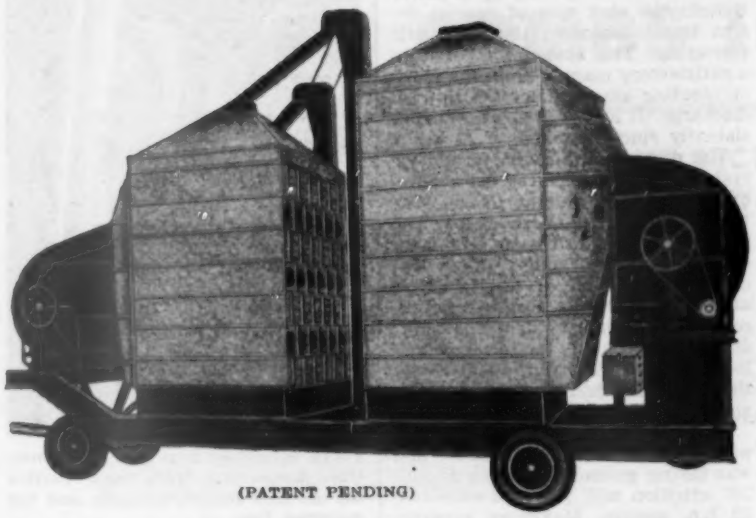

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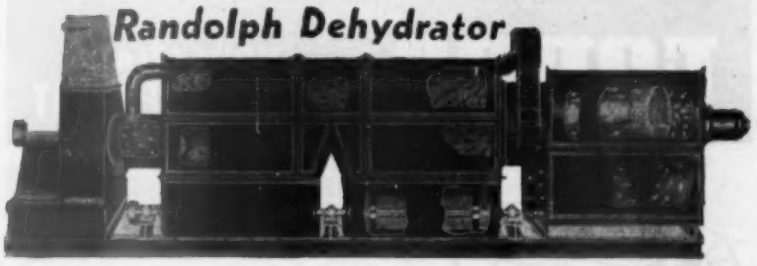
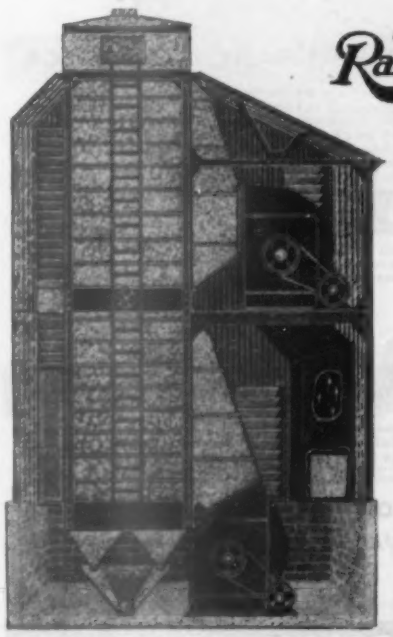
Randolph Dehydrator



Dehydration is accomplished in a two-step operation. The material goes directly into the Hammermill without extra cooling. The finished product in color is a bright green and is higher in Protein, less in fibre and higher in carotene; the reason being the leaves pass thru the dehydrator without being **scorched** or **burned.**



Interior View of a Randolph Drier Installed in a Steel Building

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DIRECT HEAT OR STEAM — CONTINUOUS FLOW — MADE IN ALL SIZES

Randolph Rice Driers

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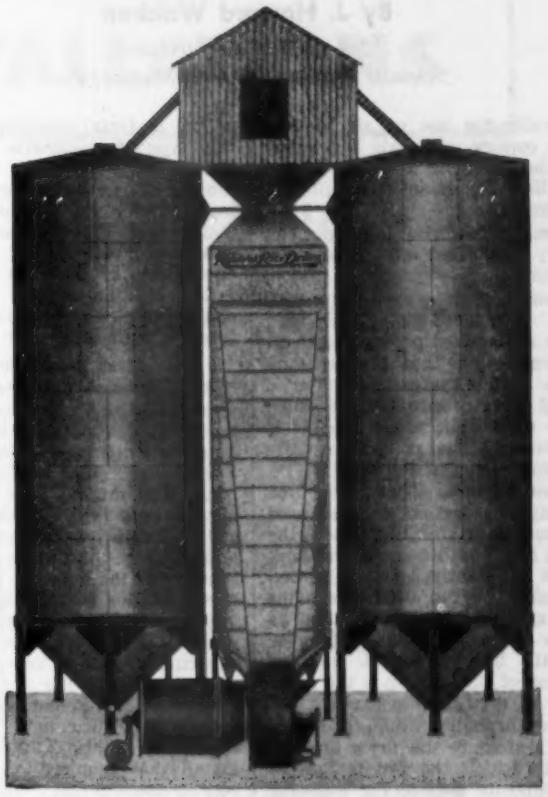

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Use of Air in Feed Plants To Convey Materials

By J. Howard Waldron
Manager, Feed Division
Sprout, Waldron & Co., Muncy, Pa.

The extensive use of air in feed mills to convey materials is a fairly recent development and one of the outstanding trends in feed mill design today.

Pneumatic material handling can generally be divided into three separate classes:

1. **Blow-through system**—The first type is the blow-through system, which is a standard products collecting system such as that used on many grinders. In this system the material is passed directly into the eye of an impeller of a high speed fan. It is then blown to a dust collector usually located in the top of the mill.

2. **Injector system**—The second type is the injector system such as used on a carloading fan in which the material is fed into a conveying hopper or a pneumatic injector located on or near the fan discharge. This type of system is ordinarily used as a means of loading railroad cars or ships with bulk grain. A familiar adaptation of this system is the grain trimmer as used in ship loading.

3. **Draw-through system**—The third type of system is the draw-through system in which the fan is located on the opposite side of the collector of the material conveying line. It is this type of pneumatic system that has probably attracted the most attention among feed millers during the last decade. Its advantage of low maintenance expense, low labor costs, extreme flexibility of installation, elimination of dust, no loss of material, cleanliness, and a minimum of moving parts has attracted the interest of millers all over the country.

First Installations

It is believed that the first negative pressure system as used in a feed mill was installed 10 years ago. Trade named the "Pneu-Vac" by Sprout-Waldron, it was first used in a large feed mill in New England to elevate bulk feed ingredients from a railroad car and transport them to bulk storage bins. Due to required location of the bulk car and the fact that no space was available for conventional bucket elevator and conveyors, Sprout-Waldron decided to experiment with a new type of air system using the fan at the discharge of the collector and operating the system under vacuum. The capacity required was 20,000 lb. per hour, the installation required a 40 ft. horizontal bottom carry and an 80 ft. lift with a 20 ft. horizontal carry at the top. An 8" diameter airline was used with a 42" long cone collector, sealed at the bottom of the cone by a 10" diameter rotary air lock. The fan was ducted to the air discharge of the collector and direct connected to a 20 HP, 3500 r.p.m. motor.

The bulk feed was unloaded from the car to a dump sink by a power shovel; the sink was of special design to accommodate the pneumatic conveying. The system operated in a satisfactory manner from the start, eliminating any dust loss at the fan discharge. It has been operating consistently since installed.

The next draw-through pneumatic system installed replaced a pressure, or blow-through system, in an attrition mill in New York state. The pressure system had been judged inefficient, wasteful, and required frequent replacement of fan impellers and casings, which resulted in excessive replacement costs and shutdown time. Actually the fan impellers had been wearing out about every three months and the fan housing about once every year.

This pressure system was equipped with a 15 HP, 3500 r.p.m. motor and was taking ground corn away from a 26" attrition mill powered with two 30 h.p. motors. Maximum capacity that the fan of the pressure system would handle was approximately 12,000 lb. per hour.

In making the draw-through system, the same 15 h.p. motor that was on the pressure system was used. Also a 42" collector was installed and the fan was connected to the collector exhaust and the bottom of the collector cone was sealed with a rotary air lock feeder driven by a ⅓ h.p. gearmotor. An 8" diameter airline from the mill to the collector was also installed. Using the same motor, this new installation was able to take the full capacity of the 60 h.p. attrition mill which was about 16,000 lb. per hour, and it was actually possible to add a second mill—a 22", 35 h.p. attrition mill—to the system which added an additonal 8,000 lb. per hour to the conveying load, or a combined capacity from

Three collectors in a mill headhouse. One supporting framework carries the air lock feeder, collector and top mounted fan.

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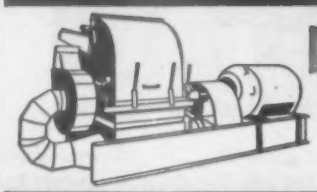

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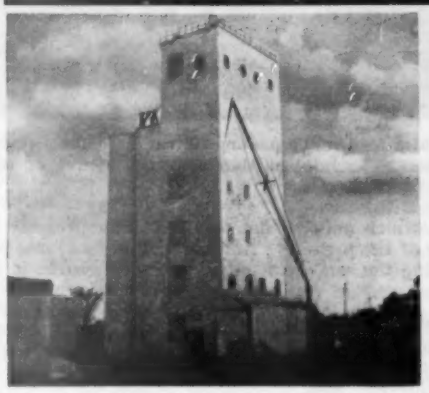

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Shown at left is the new mineral feed batching plant and bulk handling addition nearing completion at the Columbian Hog & Cattle Powder Co., Kansas City.

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This picture shows part of a feed mill's pneumatic car unloading system with multiple unloading stations. The inlet station near the center of the photo is for truck unloading.

both mills of 24,000 lb., which actually doubled the capacity of the pressure system replaced, using the same horsepower.

Advantages Listed

In the 10 years since these first installations, vacuum systems have been applied to many different jobs around the feed mill. There are many advantages to a negative pressure pneumatic type of system as compared with blow-through pneumatic systems and conventional conveyors and elevators. The big improvement when a vacuum system is installed is usually cleanliness and less maintenance. In addition the system is self-cleaning and the negative pressure system prevents contamination through material being left in the conveying system.

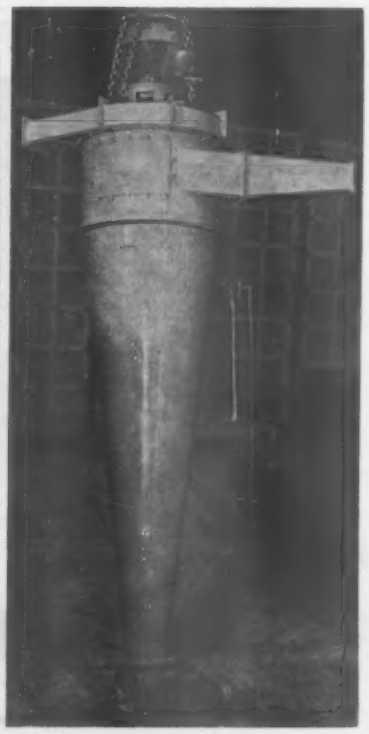
Compared with a pressure system, the draw-through system is much more efficient. In a pressure system, the material is actually run through the impeller of the fan and much of the power and energy are lost in this process. In addition, the fan blades must be made heavy to resist wear. This also applies to the housing. The design of the fan must be modified to allow for the material as well as the air. In most pressure systems, the efficiency of the fan is, at best, only 50 to 55%.

In a negative pressure system with the fan designed for air only, the blades can be shrouded and made for better balance and streamlining. Also, proper clearance between the fan blades and housing can be provided to allow for recovery of kinetic energy of the air leaving the fan tips, with an increase of fan efficiency to at least an efficiency 50% better than that obtained in the pressure systems.

Another definite advantage of the negative pressure system is found in the respective ratio of air to materials handled. In the pressure type of system approximately 8 times as much air per pound of material is

(Continued on page 41a)

Negative pressure conveying system carrying ground corn away from an attrition mill.



This is a complete "Pneu-Vac" collector assembled in the Sprout-Waldron shop. Material and air would come in at the right and be separated. The air then would go through the discharge on the left, while the material would discharge through the air lock feeder at the base of the cone.

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Lindsey-Robinson & Co. Feed Mill Modernization Program Hikes Capacity, Increases Efficiency

By PAUL L. DITTEMORE
Feedstuffs Editorial Staff

Replacement of old equipment with new, high-capacity machines, replacement of casual "make-do" arrangement of machines with well thought-out engineering, and adoption of efficient production scheduling have enabled Lindsey-Robinson & Co., Inc., of Roanoke, Va., to more than double the capacity of its formula feed plant and cut its running time from two 9-hour shifts to one 8-hour shift, with a resultant reduction of 28 workers on the payroll.

That modernization program was not brought about in a week or a month. It has taken almost two years of constant work by a small crew of millwrights, carpenters, electricians and engineers to get the job done. The remarkable feature of the transformation of the old plant into the modern "push-button" mill is that all this change was accomplished without interrupting the flow of the company's line of "Fair Acre" feeds to its franchised dealers in the five-state area served by it.

The Lindsey-Robinson firm launched its "Fair Acre" feed program after the close of World War II, and in a few years the demand for the line of "test fed" feeds was crowding the plant's capacity to produce. Those were the days when the plant operated two 9-hour shifts with a capacity of 20 tons an hour.

No Floor Space Increase

In 1948 the building—a modern brick masonry, concrete and steel structure—was enlarged, and provision was made at that time for future expansion. As it turned out, the job was more one of modernization and renovation than of expansion, for there was not any increase in the amount of floor space used. The increase in capacity was accomplished by scrapping machines and equipment that were good items when they were introduced but since had been made obsolete by more efficient and higher capacity models.

J. M. Robinson, production manager for Lindsey-Robinson.

Basically, the Lindsey-Robinson plant before the modernization program was carried out consisted of two separate major units housed within the same building. Both were batch units, one for poultry and hog feeds, and the other for dairy feeds. A third (and smaller) separate unit was used to produce small-package feeds retailed through grocery and general store outlets in Lindsey-Robinson's trade territory.

Each of the two small batch units had its own mixing and packing equipment, and the two units were operated at the same time. The set-up lacked two essentials: flexibility and economy of operation. Separate packing crews were needed to pack off and hand-truck the finished feeds to the waiting cars or truck docks. All told, it was a clumsy arrangement.

Today the feed mill consists of a single unit. The batch system was retained because it proved to be the best system to fit the production requirements to manufacture the company's 32 "Fair Acre" formulations.

Capacity Jumps

The plant now has an hourly capacity of 55 tons of feed, including scratch grains, in contrast with its former capacity of 20 tons.

New equipment includes six Merchen powered gravimetric type feeders, four Munson batch mixers each of three tons capacity, a Munson molasses mixer, two high speed Richardson packers, a Sprout-Waldron pelleting mill and cooler, a belt conveyor system to the railroad siding and warehouse, a roof or awning over the car-loading dock, plus a new electric wiring job to accommodate the installation.

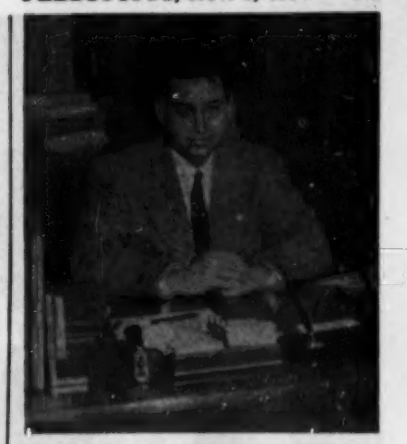
The grinding load is handled by two Jacobson 100 h.p. hammermills, with a separately driven 40 h.p. fan handling the output of the two mills. The capacity of the mills was increased significantly by installing the separately driven fan.

Improvement of the mill's dust collecting system now is in progress and should be completed by Dec. 1. Cyclone-type collectors are used to collect the biggest portion of the dust and the air from the tips of the cyclones will be diverted to the filter-type collector. Company officials said that tests showed that the cyclone collectors were operating at about 99.5% efficiency, and that the filter-type collector would be a "paying investment" by trapping the remaining one half of one percent of the material presently being discharged into the atmosphere. The Entoleter Division's Simon filter-type collector being installed has an air capacity of 28,000 c.f.m.

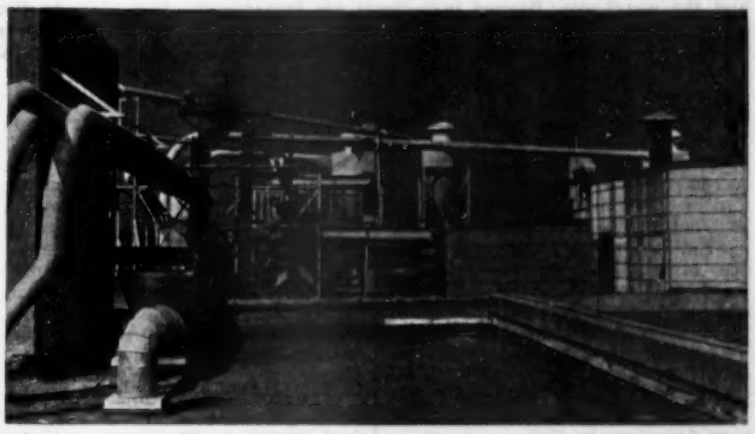
Push-Button Mill

The plant is described in the company's promotional literature as a "push-button" mill, and that claim is not an exaggeration. All equipment is controlled from a centrally controlled switch board, and an effective system of interlocks is provided in the set-up. All of the slide-valves controlling the flow of feed ingredients and finished feeds are operated by air, rather than being of the motor-actuated or solenoid type.

It was felt that the air-operated valves would be easier to install and maintain, compared to systems that depended upon electrical circuits, relays, etc. The valves which operate the air slides at the bottoms of the bins are located on the central switch panel and a pressure of 150 p.s.i. is

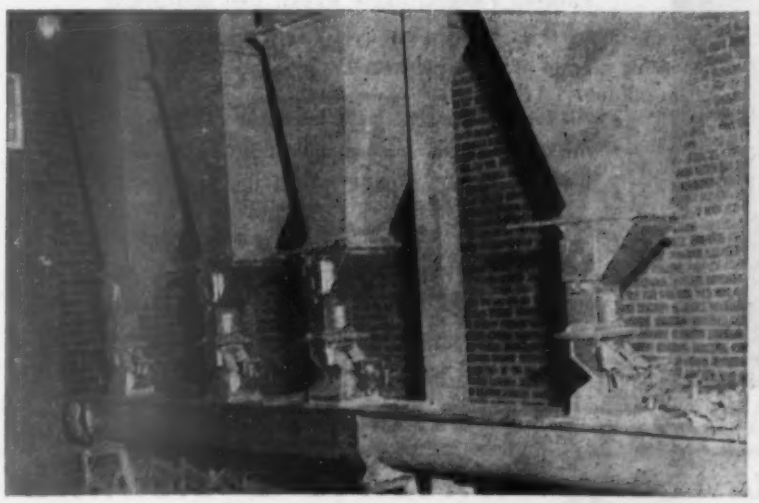


C. Grattan Lindsey, Jr., president of Lindsey-Robinson & Co., Inc.

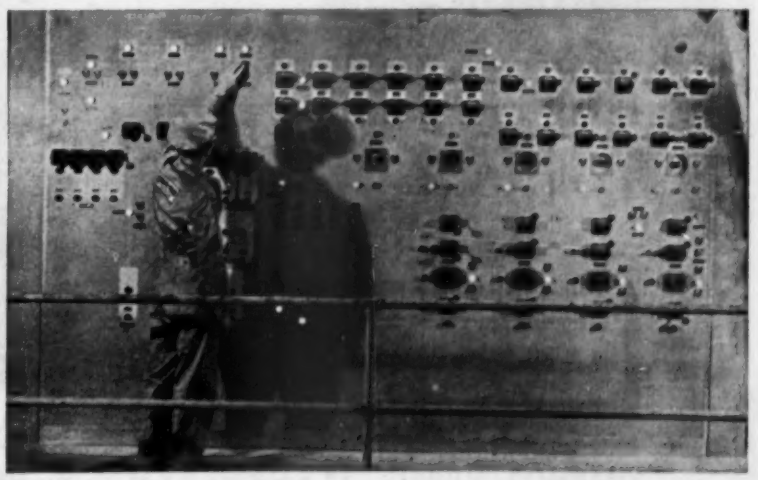


Cyclone dust collectors, elevator heads, etc., are mounted on the roof of the plant to conserve space in the interior of the mill building.

Four Munson batch mixers, each of three tons capacity, are loaded through a pick-up conveyor beneath the ingredient bins. The amount of each ingredient going into a feed formulation is regulated by powered gravimetric feeders.



Hoppers, feeders and pick-up conveyor for the scratch grain unit of the feed plant.



Operation of the bin valves, grinding and mixing machines, feeders, etc., is controlled from the centrally located switch panel pictured above. All of the switches are interlocked between machines and bin level indicators.

A conveyor belt system serves the boxcar loading dock and the warehouse. Bagged ingredients are transferred to the ingredient warehouse from the dock, and the belt system also permits loading boxcars directly from the packers or from the warehouse. On the left in the picture above is shown the feed-loading operation, while on the right is the transfer of ingredients from the dock to the ingredient warehouse.

Pictured here is one of the two high-speed packers in the Lindsey-Robinson plant. The four pneumatic valve switches mounted on the panel enable the operator to draw from any one of four holding bins above the Richardson packer.

maintained in the system. The control valves are interlocked with bin-level indicators at both the discharge and receiving bins, and the power circuits to the powered scale feeders also are tied in to the system, which is about as "fool-proof" as can be devised.

Flexibility of operation was one of the prerequisites of the Lindsey-Robinson firm's modernized mill because of the 32 different formulations manufactured in the single unit plant. To achieve the maximum amount of efficiency the new plant offered, it was necessary to schedule operations between sales, production and shipping departments.

In the production scheduling operation, 12 o'clock noon is the "cut-off" for orders to be shipped on the following day. Between noon and 4 p.m., the production office makes up the operating schedule for the following day and copies of the schedule are supplied to the production superintendent, mixing foreman (the man at the controls of the switchboard), the loading foreman, sack room foreman, packing department, quality control and sales. In making up the production schedule, the production office "lumps" all orders for one formulation, and totals the amount of that specific feed needed to fill all orders to be delivered on the loading docks. Then the mixing foreman sets up his schedules and by following the master schedule, each department involved knows exactly how many tons of each type of feed is to be made and packed, and the loading foreman knows from his copy just where each lot of each type of feed is to be spotted for loading. In effect, the Lindsey-Robinson plan of operation is patterned from the mass production plan developed by the automobile industry—everything needed to complete the order arrives at the right place at the right time without any confusion.

In the change-over from the former system of operating two small batch units to the single large batch unit, it was possible to operate the plant with 28 fewer men on the work crew. The large part of that total came from the packing and loading crew and the reduction was brought about in an orderly fashion.

Employees

When plans for the modernization program were fully developed, the company's management told the mill's employees what was to be done and how they would be affected. A complete set of job descriptions was prepared and job duties and responsibilities were outlined, since the shift from the old to the new system eliminated some jobs entirely, combined other job duties and created wholly new jobs.

The workers to be kept on the job were selected on the basis of ability

(Continued on page 40a)

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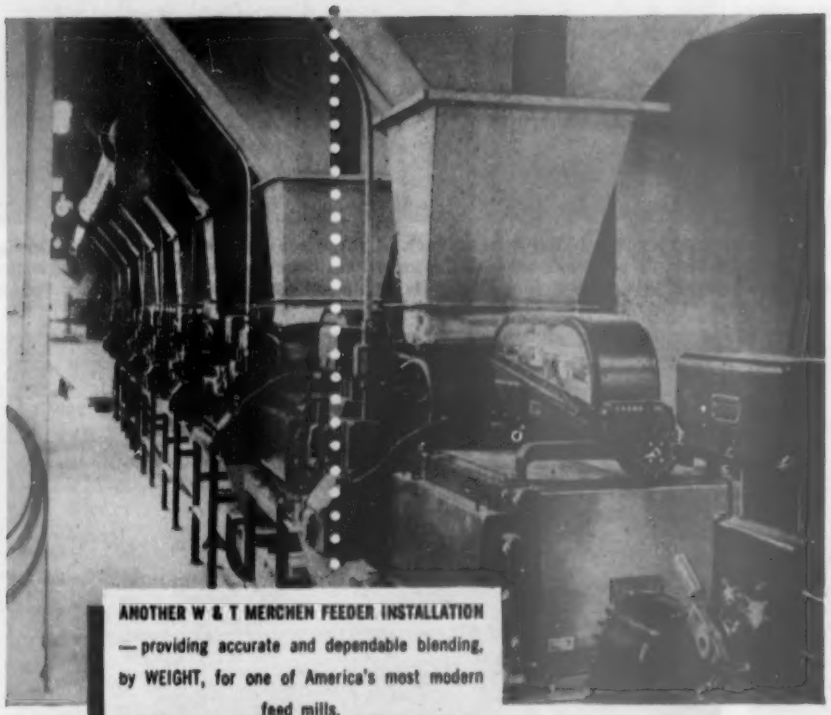

ANOTHER W & T MERCHEN FEEDER INSTALLATION — providing accurate and dependable blending, by WEIGHT, for one of America's most modern feed mills.

Merchen Feeders provide completely automatic, push-button controlled bulk operation at the Sherwood Feed Mills in Baltimore, Md. for the production of over 40 different feed and grain products.

Ten Powered Scale Feeders weigh material from 24 soft feed bins and discharge into a large steel conveyor. Two Merchen Feeders handle pre-mix materials and concentrates from 4 bins. Six Self-Powered Feeders handle scratch feed and grains from six bins. In all, over 2 carloads of feed and grain products per hour are produced.

All feeders are electrically interlocked so that failure on the part of any one unit for any reason automatically stops operation of all the feeders and conveyor belts.

W & T Representatives — trained in materials handling — will be glad to help you select the right feeders to solve your feeding and blending problems. There is no obligation, so why not call them today?

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Each shop-assembled integrated boiler, burner and control combination is fire-tested prior to shipment to check design performance and insure maximum safety with correct coordination of control equipment.

• PROPER CAPACITIES

Boilers are sized for steam demands from 6 H. P. to 400 H. P. in the most economical increments to meet your individual plant requirements and fluctuating loads. The 75 H. P. N-B boiler shown above is Model 2075. This is one of the many capacities available for use in the feed industry.

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NEW PRODUCT NEWS

Strong-Scott Introduces 8 New Products

No. 2961—Scalper

The development of the first all metal reel scalper has been announced by the Strong-Scott Mfg. Co. This new machine, designated the No. 4 Reel Scalper, is a dual purpose machine. It will remove particles either larger or smaller than the material to be cleaned, depending on the mesh of the screen used. Some of its uses are to remove straw, strings, clods and other refuse from a stream of whole or ground grain.

It is also used to separate fines from pellets and crumbles. The photograph shows the installation of the reel scalper under a horizontal mixer; the reel scalper is equipped with a special hopper and long legs. The machine is constructed of steel, or aluminum when moisture is a factor, to provide longer life and

minimum maintenance. The reel is clothed with heavy wire mesh screen. Internal ledges have been eliminated in the design of the machine to prevent infestation. For more complete information check No. 2961 on the coupon and drop it in the mail.

No. 2837—Molasses Mixer

The manufacture of a new, high-capacity slow speed molasses mixer has been announced by the Strong-Scott Mfg. Co. This machine has been produced to solve two problems confronting the feed manufacturer. First, the increased use of light and relatively bulky ingredients in feed has created a definite need for a high-capacity mixer. Second, the increased use of rolled grains has ne-

cessitated the development of a slow speed mixer which won't agitate and beat the grain until the fragile flakes are ground up.

The high-capacity feature enables the feed manufacturer to use bulky ingredients such as beet pulp or soy bean hulls. The mixer will easily handle 24 tons of this material per hour. The visual identity of the ingredients is maintained in the finished product through the machine's slow speed (71 RPM) which subjects the ingredients to a gentle mixing rather than agitation or beating. In addition, a higher percentage of molasses can be applied to the ingredients. Up to 45% of molasses by weight may be applied to the ingredients with this machine. Further details may be obtained if you will check No. 2837 on the coupon and drop it in the mail.

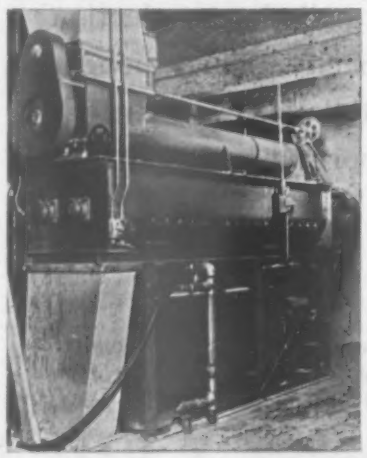
Need for Efficient Feed Manufacturing Equipment Met by Aggressive Program of Research and Development

The Strong-Scott Mfg. Co. has taken the lead in meeting the need of formula feed manufacturers for modern machinery. The wide variety of ingredients being blended into modern scientifically prepared feeds makes it virtually impossible for old-fashioned mixing equipment to meet today's production requirements.

It takes specially designed machines to manufacture the mixtures which will satisfy the modern farmer's demand for nutritious feeds.

No. 2994—Feed Mixer

The Strong-Scott Mfg. Co. has announced a new addition to its feed mixer line, called the "Uni-Blend." This new mixer solves the problem of the feed manufacturer who has been unable to take advantage of the sales demand for improved and custom blended feeds because of the



high cost of purchasing and installing proper mixing equipment. The Uni-Blend meets the need of the commercial feed plant for a moderatcly priced mixer to apply liquids such as molasses, animal fats, or fish solubles to either light or relatively heavy ingredients. It embodies the tandem mixing principle and utilizes slow rotor speeds. Thus fragile ingredients, such as rolled grain, will maintain their identity, but can still be blended in high capacities. The mixer's slow speed subjects the ingredients to a gentle mixing action rather than a beating. The Uni-Blend contains all the necessary equipment for adding liquid ingredients to dry feeds in one complete system. The unit design eliminates accessory equipment and simplifies installation.

It is necessary only to connect power, heat, and ingredient supplies and the machine is ready to operate. For more complete details check No. 2994 on the coupon and drop it in the mail.

Also Available

The following new products have also been developed by the Strong-Scott Mfg. Co. For further information about them, check the appropriate number on the coupon and drop it in the mail.

No. 2790—The Hydralift, first hydraulic truck hoist.

No. 2833—The Manlift, first manlift of aluminum construction.

No. 2897—No. 9 and 10 Heavy Duty Elevator Head Drives.

No. 2956—Feeder Magnetic Separator and Self-Cleaning Spout Magnet.

The Strong-Scott Mfg. Co.
423 Taft Street N. E.
MINNEAPOLIS 13, MINNESOTA

The market for these improved feeds is growing. Manufacturers are faced with the necessity for not only improving the quality but increasing the quantity of their production.

R. R. Strong

Finding equipment adapted to modern feed production has become a major problem among progressive manufacturers.

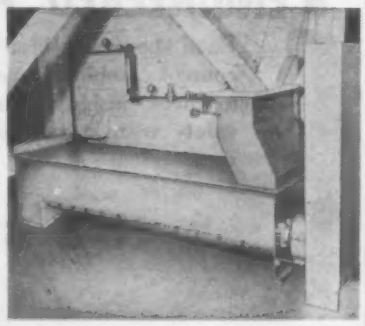
To solve this problem Strong-Scott instituted a program of engineering research and new product development never before attempted in the industry.

A Committee on New Product Development, headed by R. R. Strong, was organized to co-ordinate the various research operations and supervise the conversion of their discoveries into new products.

Featured on this page are some of Strong-Scott's new products as they were reported in Feedstuffs. The three mixers and the scalper described here are designed to solve some of today's mixing problems. Strong-Scott has developed a mixer for every need regardless of the size of your operation. These mixers assure you of efficient, economical, accurate blending, adapted to your particular capacity and ingredient requirements.

No. 2889—Feed Conditioner

The development of a new feed conditioner, designated the Tandem Mix, has been announced by the Strong-Scott Mfg. Co. Featuring positive moisture control, the machine is designed to blend additives into mill or mixed feeds. This feed conditioner will amortize itself in a short time and produce earnings for years to come.



It is available in three models, with an overall capacity range from 5 to 20 tons per hour. Exact capacity will vary according to the weight per cubic foot of the material to be treated. The Tandem Mix operates on the tandem agitator principle — twin shafts with variable angle paddles revolve from the inside toward the outside at a speed of 400 RPM. This vigorous action thoroughly mixes any additives to the base material. For more information check No. 2889 on the coupon and mail it.

Send me information on the items marked:

☐ No. 2961 — Scalper	☐ No. 2790 — Hydralift
☐ No. 2837 — Molasses Mixer	☐ No. 2833 — Manlift
☐ No. 2994 — Feed Mixer	☐ No. 2897 — Head Drives
☐ No. 2889 — Feed Conditioner	☐ No. 2956 — Feeder Separator and Spout Magnet

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The Use of Bins in Feed Plants

By A. R. Hettelsater
President, Jones-Hettelsater Construction Co., Kansas City

In looking back through the years, it is interesting to note that the development of feed processing plants has revolved mostly around the use of bins for various purposes. With the exception of developments in pelleting, there have been few changes in equipment used in a feed mill over the past 25 years, and while in many respects this equipment has been refined and improved essentially, the batch mixers, grinders, continuous mixers, packers, elevators, conveyors, etc. are the same as they were years ago and the main development has come in the increasing use of bins for various purposes throughout the mill.

From the days when ground ingredients were dumped from bags into a mixer, the first development was for grain bins to supply the grinding equipment. The next development was for small bins for ground grains processed in the plant and also for meal and other processed soft stock which then were fed through percentage feeders and to continuous mixers.

In the course of time certain producers of ground ingredients, such as soybean meal and millfeeds, found it to their advantage and the advantage of the feed miller to ship such ingredients in bulk, which brought about the need for larger bins for handling these materials in the feed mill. As a logical development, it became necessary to provide still more bins for such materials received in bulk so as to provide a reserve stock for mixing purposes. It seemed reasonable at that point to design the bins over the mixing system large enough so that the same bins could feed the mixers and at the same time provide a certain amount of reserve stock on hand so that there would not be any rehandling of this material inside of the plant.

More and More Bins

It seems that each development in the industry calls for more and more bins of one type or another. For instance, with the development of pelleting, it has become advisable to provide reasonably large surge bins for mashes which could then go either to the pelleting equipment, for making molasses feed, or for packing. Now we have the trend towards bulk shipments of feed, which in turn would make it advisable to provide bins for finished products for quick loading into trucks or cars.

A modern all-purpose feed mill necessarily developed into one of the most complex operations in the cereal industry when one considers the number of ingredients and the number of different finished products which are involved. Even with this growing complexity, some of the modern mills are actually producing feed with fewer man hours of labor per ton than has ever been done be-

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(Taken from "Static Electricity" written by National Fire Protection Association)

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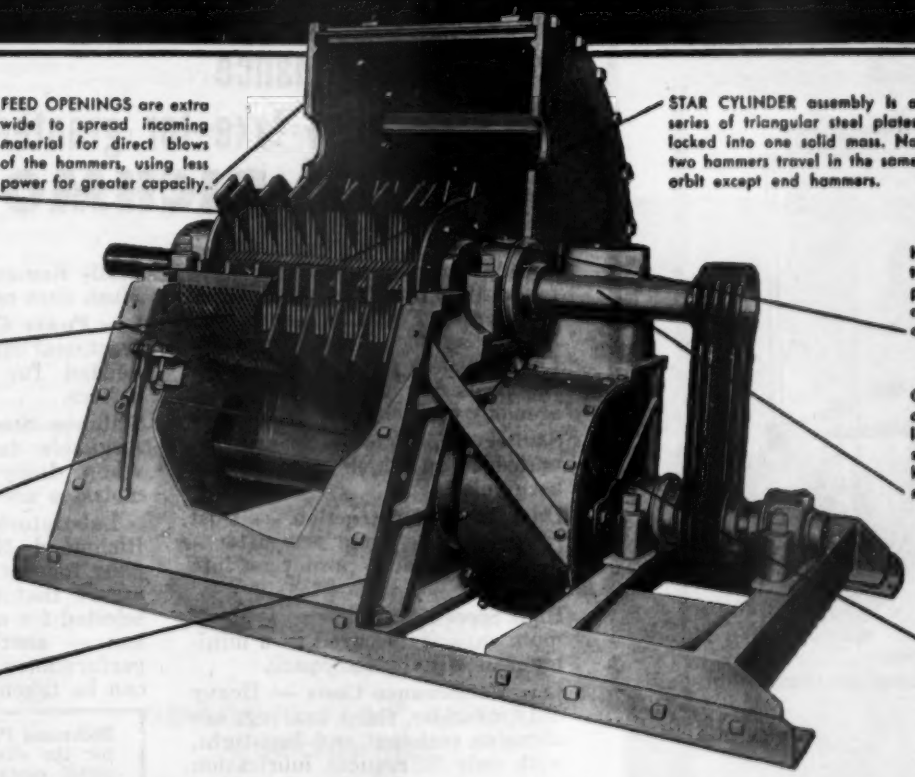

HAMMERS are tipped with Tungsten Carbide much harder than the hardest steel or other alloy. Carbon steel bodies will not break.

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STAR CYLINDER assembly is a series of triangular steel plates locked into one solid mass. No two hammers travel in the same orbit except end hammers.

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HOLD-DOWN LEVERS enable operators to snap hood open with a minimum of effort. Holds hood tight in closed position.

CYLINDER SHAFTS are oversize and extra heavy. On the three largest models, shafts are of special forged alloy steel which has been normalized and cannot warp.

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fore and also gaining the important advantages of purchasing many of the ingredients in bulk at a substantial saving over prices of the same materials in bags. Necessarily the capital investment required in such a mill is comparatively large, but when operating economies are considered, the savings in production costs justify this large investment if a plant is located so that a reasonable production schedule can be maintained.

Kinds of Bins

In the old days a few bins for holding grain for grinding were virtually all that were required, while at the present time it has been found desirable to have the following various kinds of bins in the plant:

1. Grain bins over grinding equipment.
2. Bins over mixing equipment for grains which are ground in the plant.
3. Bins over mixing equipment for soft ingredients which can be received in bulk, such as soybean meal, cottonseed meal, linseed meal, distillers' grains, brewers' grains, millfeeds, etc.
4. Bins for mash from the mixing system to supply pellet mills, molasses mixers, etc.
5. Finished product bins to feed packers.
6. Finished product bins to supply bulk feed to trucks or railroad cars.

As the requirements for a feed mill cover such a wide range depending upon location, capacity and finished products involved, it is impossible, of course, to arbitrarily make recommendations for the number and size of these various classifications of bins.

General Recommendations

In general, however, we think that good design would call for a range somewhat as follows:

1. Enough bins over grinding equipment to accommodate each of the various grains which are being ground and used in the plant. If a separate grain elevator is available, these can be small in capacity as grain can readily be transferred from the grain elevator to these grinding bins. If, however, there is no grain storage available, we feel that these bins should have a capacity of at least two carloads so that the operator can replenish the supply while he still has a substantial amount on hand.

2. There should be enough bins for ground grain processed in the plant to accommodate each kind of grain which is being used but we do not see any need of having bins of large capacity for this work, provided grinding capacity is sufficient to keep up with mixing capacity.

3. Bins over mixing equipment for soft ingredients received in bulk should have a capacity of at least a car and a half unless reserve storage bins are provided with ready means of transferring from reserve stocks to working bins. The number of these working bins, of course, will depend entirely on the particular situation but we consider ten to be a minimum.

Soft Ingredients

4. The item of storage bins for reserve stocks of soft ingredients is one mostly dependent upon the origin of these supplies. For instance, we recently had occasion to add a substantial amount of storage of this type for a feed mill on the West Coast because their supplies of soybean meal had to come from a long distance and they need to carry a substantial inventory to provide for delays in shipment. At other plants which we have built it was not considered necessary to provide any reserve of this type as supplies were readily available from nearby processing plants.

5. Here again the number of bins required is dependent upon many other factors, but we feel that there should be a sufficient number so that if the mixing formula varies, there

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Sanitary Operation—No crevices or ledges on which material can accumulate.

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Easily Removable Screen Frames Mesh sizes can be changed easily.

Low Power Consumption — Only fractional horse-power motors are needed for most Gyro-Whip Sifters.

Stainless Steel Screen Frames—Available to simplify cleaning when dairy feeds containing molasses are sifted.

Laboratories are maintained by Richmond Manufacturing Company for testing any materials to assure that the proper sifter is selected for any separating problem — another reason the top performance of Richmond Sifters can be taken for granted.

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R-16

will always be an adequate supply ahead of the pellet mills and molasses mixers. For this purpose we do not recommend very large bins as there is too much danger of separation. Where it is advisable to have large bins for this purpose, it is of course possible to so design them by means of baffles or some other method to keep the feed from falling free.

6. These finished product bins over packers, we believe, should only be large enough to take care of a shutdown of the packer due to broken threads and other short delays. It is often desirable, however, to have two bins for each packer so that formulas can be changed without shutting down the packing operation.

7. The particular requirements for supplying bulk feed vary so much in different localities that no fixed recommendation can be made regarding number or size of bins for this purpose. The most desirable, however, would be to have enough capacity in different bins so that the second shift perhaps could provide all of the bulk feed needed for delivery the next day and thereby save one packing crew. There are, however, many situations where this is not practical and the facilities would have to be tailored to meet each individual case.

To point up the development through the years, our company recently completed a mill with 83 bins for the various purposes outlined above. We do not mean to imply that this many bins are essential for a good operation or that in some cases more might be required, but just point it out as a result of this development.

Bin Types

In deciding upon the type of bins to be used in a feed mill, the choice generally becomes one between steel or reinforced concrete bins. Feed milling being an essentially hazardous industry from a fire and explosion standpoint, the use of wood construction should not be considered for any permanent installation. In choosing between steel and concrete bins, the overall design of the plant must be considered as well as the purpose to which bins are to be put and the size of bins.

Generally speaking, rectangular steel bins tend to become very expensive, and round steel bins have a disadvantage of using almost double the floor area which would be required for concrete bins. This is not a handicap in certain operations such as packing bins and others where no large capacity is wanted, but where bins to hold one or two cars of material are desired, it becomes a serious drawback.

There are, of course, many places where the feed miller must take advantage of an existing building where steel bins are the only practical thing to build, but we feel that where a new mixing unit or an entire new feed mill is involved, concrete construction is by far the most economical and satisfactory type of construction.

Our company has more or less arbitrarily considered that where bin capacity of less than 10 tons is required, steel may very well be the proper answer, but from there up to 100 tons, we recommend rectangular concrete bins. For a reserve storage where it may be desirable to design bins holding up to 500 tons, or even more we recommend round concrete bins.

Hoppers

It goes without saying that no matter what material is used, the proper design of the bin and hopper under the bin is absolutely essential to the successful operation of the plant. In rectangular bins we always like to have our hoppers in the corners, giving us two straight sides with a slope on the hoppers of at least 60°. We prefer to use steel bin bottoms as they can be made more accurately than it is possible to pour concrete bottoms. We also like to see the bin walls for soft stock given a smooth finish so that there is no obstruction of flow of materials to the hopper. On certain materials, such as bran and ground oats, we have also found it to be advantageous to provide compressed air jets as near the top of the hopper as possible to break up any bridging action.

In designing large tanks for storing reserve supplies of ground ingredients, we generally design these with several openings in the bottom with screw conveyor feeders under each opening and the hog backs between openings having a slope of at least 60°. We have put in several installations like this dating back as far as 25 years, and in general they have worked satisfactorily. It is obvious, however, that in storing soft ingredients in bins of this size, careful attention must be given to the moisture content of the materials. We have also found it advisable with bran to keep turning it frequently as there is a tendency for it to pack if left in a bin very long, and it can then become a real problem.

The present trend towards selling finished feed in bulk brings about new problems. We have built some plants where bins for this purpose were incorporated in the feed mill and which have worked out very well. In the large majority of cases, however, these arrangements for bulk loading are being added to existing plants where it is not practical to get the necessary bins inside of the plant. In these cases the best answer we have found yet is overhead steel bins so arranged that trucks can drive under them. This, of course, involves some method, such as a truck scale, for weighing the feed put into each compartment of the truck and also preferably should provide some way of transferring left over amounts of feed in these bins back into the plant.

There are other developments going on in the design of feed mills, all of which have the objective of producing a more uniform feed at lower costs. These include more or less automatic methods of weighing materials to the mixers, the use of bindicators which can automatically control the transfer of materials to replenish working bins, the use of remote controls for turnheads and conveyor discharges, and other items of this nature, but the effectiveness of thees developments all depend upon having the proper number of bins for various purposes to get the best results.

Plant Show Scheduled

NEW YORK — The next Plant Maintenance and Engineering Show will be he'd Jan. 24-27, 1955, at the International Amphitheatre in Chicago, according to Clapp & Poliak, Inc., New York.

The conferences sessions for engineers and production heads will be held in the arena adjoining the exhibits.

The next show, the sixth, will be the largest in the history of the event, the sponsors say.

MACHINERY REPLACEMENT

Every industrial plant should have a planned program of replacement of machinery, engineers advise. In addition to knowing the costs of new machinery, a plant should know what it costs not to replace machinery. A number of factors must be considered when machinery is about to be replaced. Among these are the life expectancy and cost of existing machinery as compared to the cost and increased productivity of proposed equipment. Some firms have a certain method or formu'a for computing the difference in dollars and cents, which indicates whether machinery should be replaced.

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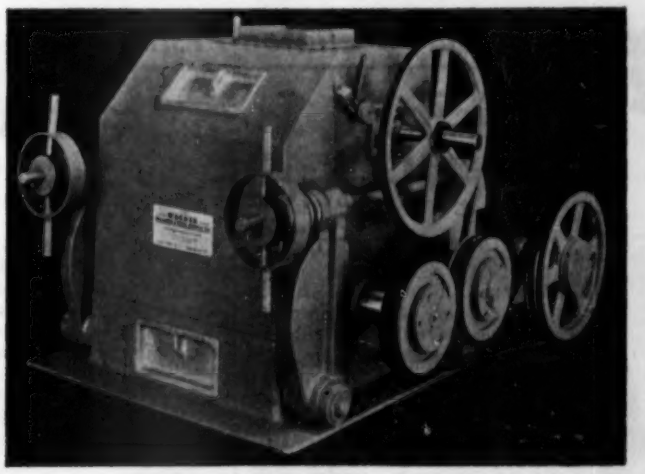
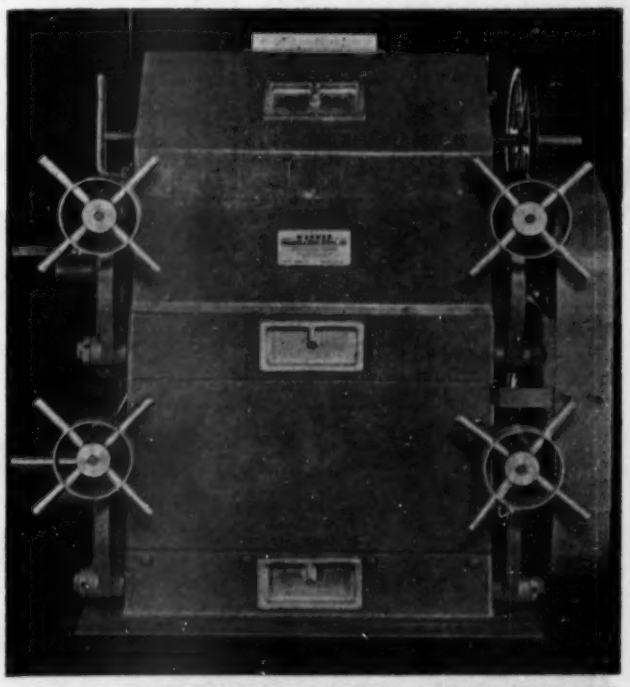


ONE HIGH



TWO HI TYPE FOR GRINDING ALL GRAINS
COARSE — FINE OR MEDIUM

WAGNER MACHINE & MILL SUPPLY 4444 YORK DENVER, COLO.

This picture shows feed being removed from the revolving sorting table and placed on pallets. The feed is discharged from the conveyor onto the apex of the conical shaped table, and it then moves down to the outside edge of the table. Several different types of feed can be sorted and palletized simultaneously with this system.

A roller dolly carrying a pallet load of feed is being wheeled into a truck. A fork truck sets a one-ton palletized load down onto the dolly on the truck dock, and then the load is wheeled into the truck where the bags are removed from the pallet and stacked.

At Pillsbury's Clinton Plant

Efficient System for Warehousing And Handling Finished Feeds

By ROGER BERGLUND
Feedstuffs Editorial Staff

The feed manufacturing industry in recent years has been putting increased emphasis on rapid, efficient and cost-saving warehousing and handling of finished feeds.

In line with this trend and to handle increased business and improve customer service, Pillsbury Mills, Inc., this year completed and put into operation at its Clinton, Iowa, plant a new warehouse addition and new facilities for storing and handling manufactured feeds from the packing lines to railroad cars or trucks.

The plant addition is a large, modern warehouse adjacent to the old warehouse. At the same time the company installed a new system of handling finished feeds. This includes a revolving sorting table, fork lift trucks and take-it-or-leave-it pallets.

The new one-floor warehouse provides an additional 15,000 sq. ft. of space, and it permits storage of 1,600 tons more finished feed. The building, of steel and brick construction, is immediately adjacent to the old warehouse, and the entire warehouse facilities have been integrated. The older warehouse, with two floors, has 26,000 sq. ft. of space.

More Types of Feed

One of the main factors in the construction of the new additonal facilities was, in addition to a bigger total volume, the growth in the number of different types of feeds.

Under the old set-up, because of a shortage of warehouse space, it was difficult to store enough feed of the many various types to fill orders rapidly with feeds on hand. That often meant time-consuming production changeovers and short runs to fill the particular orders, with more idle time for the production facilities.

This problem was essentially the same as that of many plants in the industry.

Studies showed that it would be more economical to have longer production runs, with fewer changeovers, and put more feed into the warehouse and then draw from those stocks in filling orders, David Donnelly, Pillsbury materials handling engineer, explained.

This, of course, would involve an efficient, labor-saving system for handling and loading out the feed. In addition, it was noted, the new system would facilitate service to customers in providing faster and more economical handling and loading out of orders.

Under the old system, all feed went to the car spots or to the warehouse over a single conveyor belt. To move different feeds to individual cars, it was necessary to have a man diverting each type to a particular car. Then, for example, if five types of feed were moving down the belt, it was necessary to have four men diverting.

Also, the old system involved more shifting of loading crews from car to car as well as more changes in production and packing. Frequently, packers had to be idle and lose time while loading crews shifted.

In the warehouse, it was necessary to hand-stack the feed. Each bag was handled into the warehouse and then off the floor and into cars or trucks by two-wheel hand trucks. While 8 to 10 bags were moved by one man with a hand truck, it is now possible, with fork lift trucks and palletization, to move 40 50-lb. bags, or a ton, at a time.

Most of the feed produced in the plant is packed in 50-lb. paper bags. Some molasses and other feeds are packed in burlap and cotton bags.

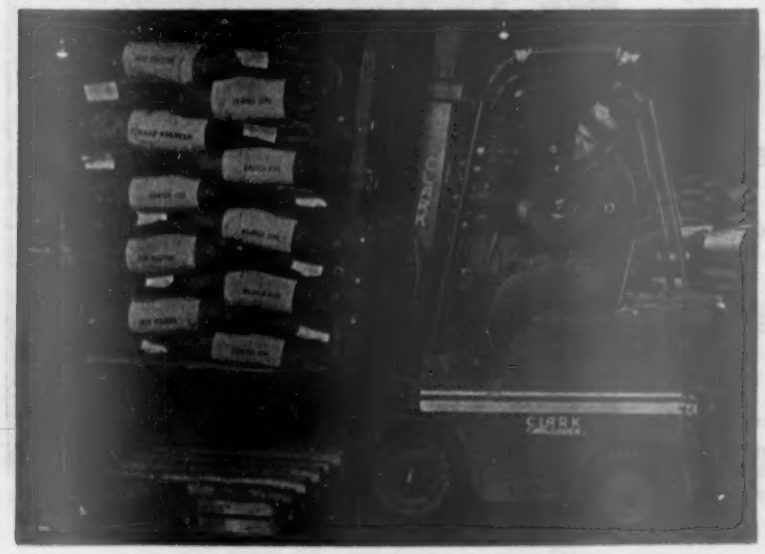
Warehouse

The large new warehouse has no columns and the area is entirely open, making it easier to store and move the feed. Also, the aisles are well defined, facilitating fork truck operations.

Space is allocated for each of the different types of feeds, making it easy to place or remove the right feed. The feed can be piled three pal'et loads high.

One of the features of the new addition is translucent panels in the roof, providing skylighting which makes the whole storage area lighter and brighter.

With the old warehouse and the new additon, there is provision for spotting 16 freight cars on the two



Take-it-or-leave-it pallets are used in the Pillsbury handling system, and, as shown here, a ton load of feed can be picked up with the fork truck leaving the pallet behind. In this picture, the fork lift truck has picked up a load which had been placed on a pallet at the turntable. This load will be taken to a freight car and deposited there. There is light cardboard under the bags.

Here may be seen a fork truck backing away after depositing a one-ton load of feed in the end of a railroad car. The take-it-or-leave-it pallets are left behind in the warehouse and the feed is moved into the car without pallets. Depending on the the width of the car, bags, as shown, may be placed between the pallet loads to make the car load tight.

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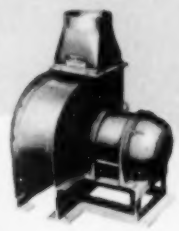
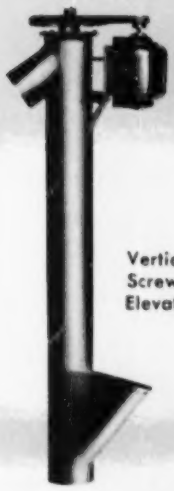
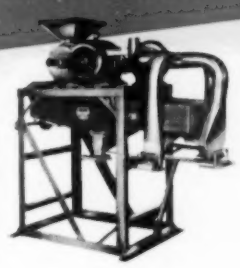


Grain Blower & Exhaust Fan



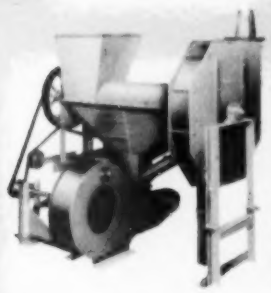
Vertical Screw Elevator

Cob Crusher for making Poultry Litter

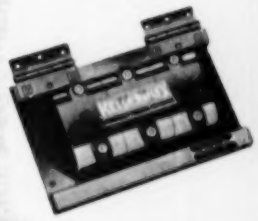


Corn Cutter and Grader with Aspirator

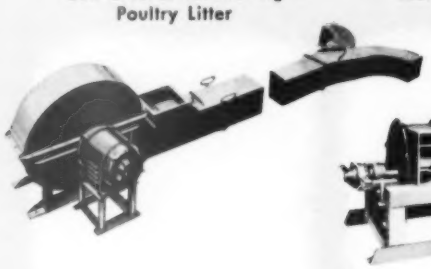
Vertical Feed Mixer ½ to 5 tons and larger



Corn Sheller with blowers for grain and cobs



Magnetic Separator protects mill machinery



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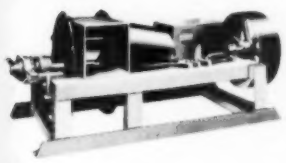

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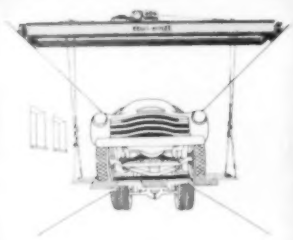
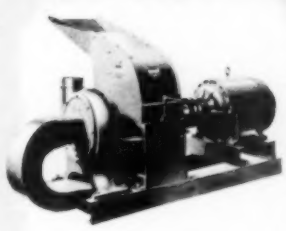
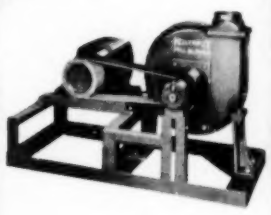


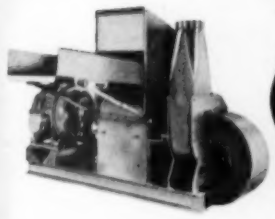
Electric Truck Hoist cuts handling costs



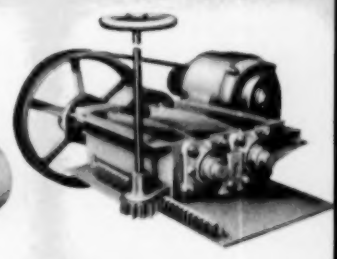
Model "M" Hammermill with direct connected motor



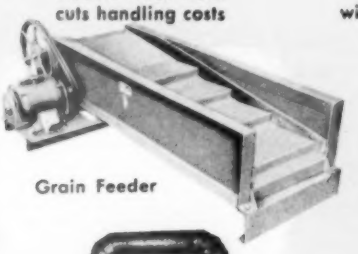
Attrition Mill Blowers for any size plant



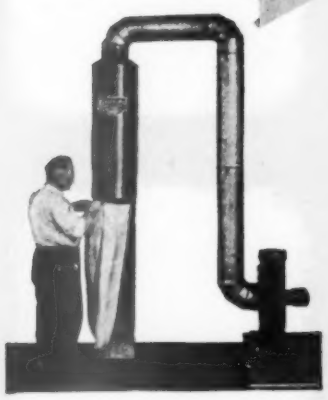
Model "S" Wide Throat Hammermill



Corn Crusher and Feed Regulator



Grain Feeder



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Yes, I'm interested in the KELLY DUPLEX machinery checked at the right. Please send me full information on these machines without any obligation.

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KELLY DUPLEX Twin Molasses Mixer

Requires Minimum Space

A "Twin" and 2 Kelly Duplex Vertical Feed Mixers give you continuous operation and real profits. While the batch from one mixer is being processed, the second mixer is preparing a new batch.

The "Twin" is furnished with a 7½ H.P. motor, a 1 H.P. conveyor motor and a 2 H.P. molasses pump.

Interest in molasses is at an all-time peak. Always high in nutritional value and palatability, it's now low in price compared to corn . . . and is being used liberally in all the latest supplement formulas.

What does all of this mean? Simply that there's big volume and big profits ahead for you in both private brand and custom mixed sweet feeds — especially when you use the Kelly Duplex "Twin" Molasses Mixer. With its twin paddle rotor, this machine adds molasses in just the right proportion —assures fast, thorough, even mixing without balling or lumping — and practically eliminates all cleaning. Carefully designed and sturdily constructed for unsurpassed operating efficiency, economy and life, the "Twin" requires only a minimum amount of space — and can be adapted to any plant setup. Investigate its profit-making possibilities now!

Check and mail card today for full information on this profit-making combination!

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KELLY DUPLEX Vertical Feed Mixer

Lets you load, mix and sack a complete batch in less than 15 minutes. Mixes evenly and thoroughly . . . uses less power . . . is practically noiseless. Built to give you steady, dependable performance . . . less maintenance . . . longer life. Six sizes—½ to 5 ton capacity.

Here is an exterior view of Pillsbury's new warehouse at Clinton before the new building was entirely finished off. To the left may be seen the older warehouse, and behind that is the feed manufacturing plant. On the left of the older warehouse is a truck loading dock. The doors on the left of the new building also provide truck loading space. On the end of the warehouse, as shown in the picture, there is provision in the construction for making additional doors. The railroad tracks and car loading spots are on the side of the warehouse facilities not shown here.

railroad tracks along the covered rail loading dock. Because of the nature of the area served by Pillsbury's Clinton plant, most of the feed going out is shipped by rail.

However, increased truck volume brought an expansion of truck loading space. There is space for loading four or five trucks at the dock on the older warehouse, and space for additonal trucks is provided in the new warehouse. Also, in the event more truck space is desired later, there is provision in the construction for making new doors on the end of the new warehouse.

There are large doors between the new warehouse and the first floor of the old warehouse, and the whole warehouse operation is integrated into one system.

The new warehouse and handling facilities make it possible to have most of Pillsbury's feed products available at any time, and this means filling any type of order faster.

Revolving Sorting Table

There are five packing lines in the feed plant, and one conveyor belt is used to carry all feed from the production area to the warehouse area. This is made possible by the revolving sorting table in the new warehouse which permits a variety of products to move on the same belt and then be readily separated and palletized.

The conveyor belt runs from the packers along the second floor of the older warehouse, and then there is a declining belt to the turntable, located in the new warehouse area.

As the feed moves a'ong the belt on the second floor, some of it, if so desired, can be taken off and palletized and stored on the second floor of the old warehouse. This feed then can be dropped down later, palletized and moved to cars or trucks.

Most of the feed, however, bypasses the second floor warehouse and goes on to the sorting table, where it is palletized and then moved to its proper storage space in etiher the new warehouse or the first floor of the old warehouse, or it may be moved by fork truck directly to cars or trucks.

The turntable makes it possible to sort and palletize feed more easily than would be the case with a slideboard.

The turntab'e is similar to those used in a few other feed and flour milling plants and in some other industries.

Pillsbury's turntable, made of sheet and structural steel, is 22 ft. in diameter and is conical shaped. It revolves at a variable speed of 1 to 3 r.p.m.

Sorting, Palletizing

The feed comes onto the revolving sorting table at the apex of the cone. It then slides down to the outside of the table, where there is a horizontal edge from which the bags of feed are removed. The bags are carried to the outside of the table by the slope and away from the discharge area by the turning action.

The size of the turntable permits surges of feed, and it will hold a back-up of 100 to 120 50-lb. bags.

Men are stationed properly around the turntable, and then several different types of feed can be conveyed from the packing lines to the table. As the different types of feed move to the edge of the table, each man can remove a certain type and stack it on a pallet. In that way, workmen can palletize several different feeds simultaneously. If the feed were coming s'owly, perhaps one man could handle two types of feed. Usually, however, the feed comes at a rate making it necesary to have at least one or

(Continued on page 40a)

A pallet load of feed is being piled by the fork lift truck on top of another load in the new warehouse. The feed can be piled three pallet loads high.

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Figure 1

New Custom Feed Plant

The Klemme (Iowa) Cooperative Grain Co. feed plant is an example of a new modern custom feed mill designed and equipped to do custom grinding and mixing and branded feed manufacturing efficiently and economically.

The feed operation is a relatively large one, and various services are performed for the farmers in this particular area. The plant was completed last spring.

The mill makes a large amount of custom-mixed and branded feeds and concentrates, and it also is equipped for such things as corn shelling, grinding and oat rolling and crimping.

A description of the things shown in the accompanying pictures will show essentially how the plant is built and operated.

Figure 1. This picture is an exterior view of the Klemme Cooperative's feed plant, built by the T. E. Ibberson Co., Minneapolis. Not shown but to the right of the feed mill is the company's grain elevator for its grain operations. To the left another new elevator is to be built later, and it will have spouts to the feed unit shown here.

On the right in this picture is the warehouse for storage of bagged feed ingredients and finished feeds. Alongside the warehouse is the loading dock for handling of sacked feeds.

Rising behind the warehouse is the feed plant, with its space for bins above and the mill equipment and work floor. It is an all overhead house. The basement contains the hammermill, electric room, drag feeder taking material from the driveway, etc.

The bins are studded and sheathed with dressed and matched lumber, and the plant is iron-clad.

On the left is the enclosed driveway for unloading grain and loading out ground grain or feed. On the outside of the building on the left is a spout for loading. Since this picture was taken, another driveway has been built to the left of the one shown here.

The bin space includes 32 overhead bins of various sizes for storage of grains, feed ingredients and finished feeds.

Figure 2. This picture shows a portion of the work floor in the Klemme mill. On the right may be seen a control board with the plant's bin plan. Beneath the board are controls for opening and closing the slides on certain bins from which materials may go to the hammermill. Contro's for certain other bins are in other locations in the work area.

A sacker from one of the bins may be seen in the back part of the area shown in this picture.

In the center foreground of the picture is an aerator which picks up dust in the air. The dust is drawn up to a cyclone, from where the material is directed back into a bin.

Also in this area are electrical controls for legs serving the various machines.

The plant has four elevator legs, and they may be seen on the right, behind the control board.

Figure 3. This is another view of part of the work floor in the Klemme mill. Overhead in the center of the picture is the Strong-Scott 2-ton horizontal mixer, with the sacking spout below.

On the left is a Weight-O-Bulk buggy for weighing out concentrates, ground grains or other materials for mixing. This buggy is wheeled to the opening over the pit into which ingredients for the mixer go. A gate on the bottom of the buggy is opened, and the materials for the batch empty into the pit. The material is then elevated to the mixer.

When feed is to be weighed out from the mixer, a scale is placed under the spout from the mixer. It is also possible to spout the mixed feed from the mixer down into a pit, and then the feed goes into a leg and is elevated to a bin for loading out or sacking later. Feed can be weighed and sacked off from other sacking outlets in the plant.

On the right in Figure 3 may be seen a Strong-Scott feeder-scalper-magnetic separator which removes metal, sticks and stones ahead of the plant's Jacobson Universal hammermill.

All starting equipment for machinery is in a special electrical room in the basement. The controls for the machines, though, are as close to the various machines as possible.

Figure 4. This picture is an interior view of the driveway area shown from the outside in Figure 1. In the foreground is an overhead lift for trucks bringing in grain. The grain is dumped into a pit in the back part of the picture. Overhead are four loading chutes, with canvas attachments, for loading bulk mixed feed or other materials into the trucks. (Fig. 4 on page 34a.)

On the right is a dock, and also seen there are two sacking outlets for mixed feed which is to be sacked.

Truck weighing is done at the elevator.

The plant is designed and equipped with legs, bins and other facilities so that the various individual operations —such as grinding, oat rolling, or mixing can be carried out at the same time. That is, one operation or unit does not have to be shut down so that another operation can be carried out.

The 32 bins help provide flexibility in operations, and they are used for holding various materials, including mixed feed. It is possible, for example, to run the branded feed mixing operation at certain times, elevate the feed back into bins, and then weigh and sack it off at another time.

Important Factors in Designing, Equipping Custom Feed Plants

By Tom Ibberson
T. E. Ibberson Co.
Minneapolis

As everyone knows, there is no industry that has growing pains such as the feed industry has at the present day. Also, with wages the way they are today, anyone who wants to build a new custom feed plant tries to effect all the economies he can in the handling of raw products as well as the finished products and to design and place his machines in such positions as to cut the overhead to a minimum.

One of the problems that is coming up every day, even in small custom p'ants, is the handling of bulk materials. In the small custom mill, this problem is different from that in larger plants. Custom plants are more or less interested in the handling of soybean and linseed oil meal only. Handling these materials through a custom plant is not hard to do because most of these custom plants receive their merchandise in truckload lots and for that reason it is not hard to get solvent meal out of the bins when desired.

Another problem with which the feed man is concerned is more horse power on his grinding equipment. Naturally, we all have to strive for better service, and in order to give better service, it is necessary that we have sufficient horse power on our grinding equipment. Up until the present day, the trade, generally speaking, has not demanded more than 75 H.P. on their mills, but now nearly every one is talking 100 H.P. on these machines.

Two Mixers

In the average custom plant where an operator used to install one 2-ton mixer, many now talk of using two 2-ton mixers with sufficient legs for loading and unloading this equipment separately.

In the larger type of custom plants, many operators are demanding two driveways parallel to each other, one being used for nothing but unloading incoming stock and this is usually the outside driveway. It is logical that they should do this, because when dumping ear corn, or ear corn and oats mixed, which is a slow operation, it does not block their traffic. The

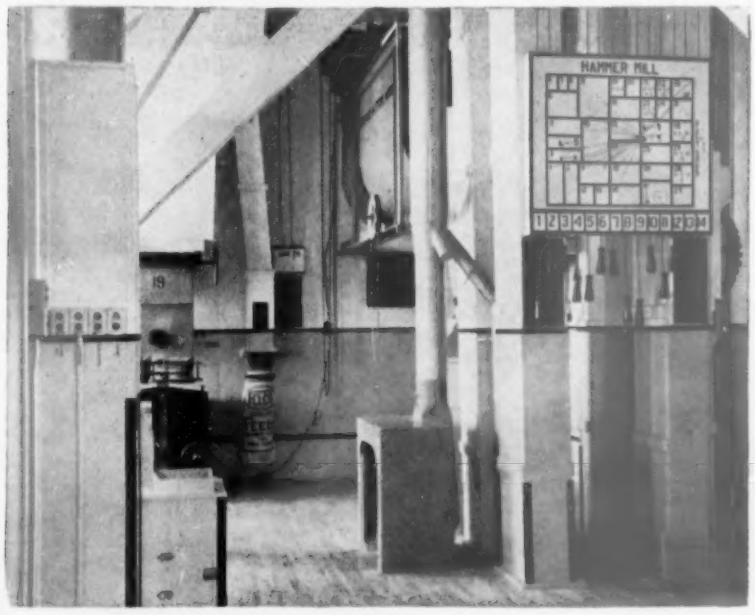

Figure 2

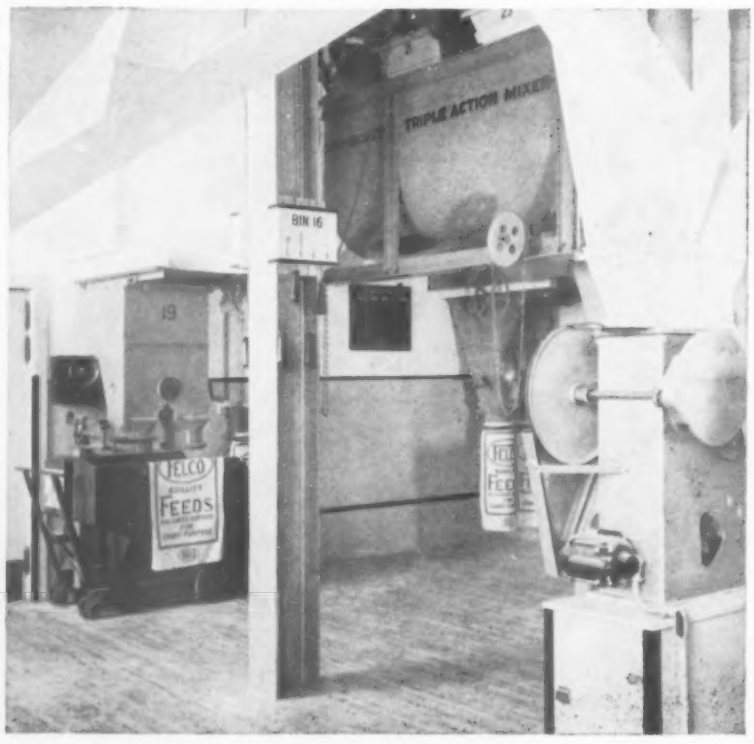

Figure 3

second driveway will be used for loading bulk merchandise and servicing the retail business in all types of weather.

In the designing of a custom mill, it must be decided first if it is to be designed to operate in connection with the existing property whereby stock can be delivered to it from that property, or to be constructed independently, with provisions made for the receiving and storing incoming stock as needed.

Flow of Traffic

In constructing new custom plants in connection with existing buildings, the flow of traffic must receive first consideration in designing the new layout. One cannot mix the grain business with the feed business satisfactorily. Consideration must be given to the servicing of customers from the warehouse without interfering with the operations of a grain elevator. Each project is a problem of its own which cannot be solved without being thoroughly studied under all circumstances and conditions.

In the design of a custom feed plant, one should make a careful study of where he wishes to p'ace this plant. First, if it is desirable to connect this plant to a country elevator, the approach end of the elevator driveway is the most unhandy and undesirable place to locate mills or warehouses, and it is quite impossible to operate satisfactorily because of the interference of traffic. The best place to locate a custom mill which is served from the elevator is on the exit end of the driveway, but when so located, care should be taken to position the mill at least 60 feet from the exit doors of the driveway to the entrance doors of the feed mill driveway. In doing so it will give plenty of room for semi's or large trucks to unload in the elevator and clear the mill building on the way out. The space between the mill building and the elevator can be utilized in the construction of a warehouse. This warehouse should be used for raw products and not retailing, for if the material were retailed from this warehouse, it would block the traffic from the elevator. A warehouse should be built on the opposite side of the mill for retailing finished stock. In laying out buildings in this manner, you are divorcing your grain business from your feed business. One will not interfere with the other.

Secondly, if site conditons will warrant the positioning of a custom mill across the driveway from the elevator, the problem here is to get access to the mill from the warehouse if it is located across the driveway and next to the track. Here, too, one has to contend with the traffic going out of the elevator when transferring ingredients from the warehouse to the mill room.

Separate Warehouses

Thirdly, when your mill is set separate, the same thing holds true as far as efficiency is concerned. There should be separate warehouses on each side of the mill building, one for raw merchandise and one for finished, and naturally the finished warehouse should be on the exit end of your driveway.

There are some basic princip'es that one has to heed when laying out or planning a custom mill, and one is the height of floor locations. First, great care should be taken to have the proper height from the basement to the finished mill floor. This area is where you build sub-pits to furnish your legs as well as house your blowers, grinding machines, etc. Secondly, where caution has to be used is the height from the finished floor of the mill to the ceiling floor of the bin bottoms. Sufficient height must be maintined in this area so that all spouts coming from bins, both raw and finished, have enough pitch so as not to have any question of any materials not flowing freely. Thirdly, it is definitely essential to provide plenty of height from the top of the bins to the throats on the legs in the mill. If in designing a mill these heights are maintained correctly, no custom mill should have trouble with the delivering of any feeds of any kind.

It is very important in designing a bin area to make it as compact as possible and not spread it out over a large area. When this happens, it

A Lesson in Welding Operations

By J. P. CORCORAN

Engineer, Mill Mutual Fire Prevention Bureau

A recent report of a loss caused by an explosion from welding operations brings forcibly to mind the lessons that must be learned from such practices. Fortunately this particular fire loss was small, but there have been many large losses amounting to considerable dollar volume in property loss because of these operations. Loss of life due directly or indirectly to these fires is also an important factor.

The losses percentagewise may not be as great as some of the other better known causes for fire losses but the hazard, regarded as a common hazard in plants which the Mill Mutual Fire Insurance Companies insure, is one which can be avoided much more than it is if just the most simple regulations are to be followed.

A bulletin prepared by the Mill Mutual Fire Prevention Bureau entitled "Don't Gamble With Cutting and Welding Fires" is available to everyone upon request. This bulletin discusses the requirements to be followed before starting, during and after the welding job. The requirements are simple and easy to follow and would mean no hardship to anyone.

The reason this most recent loss had occurred would be because these simple rules were not followed. We have only experience to guide us many times, unfortunate though it may be, and each time a welding loss occurs, it seems that one or more of the prescribed rules are violated The worst abuse here has been that the machinery was not shut down during the welding operation and this is most significant because in not shutting the machinery down, it was impossible to isolate and protect the very area that was indirectly responsible for propagating the heat which caused the ultimate explosion. Whether or not the immediate area had been cleaned before the job had been started, or whether any men had been posted with ready first aid fire fighting equipment has not been indicated.

It was just a simple thing. A welding operation had to be performed and it involved welding metal brackets to a metal elevator leg; but, the leg was not shut down while the welding was being done. Here we have this lesson spelled out very plainly for us.

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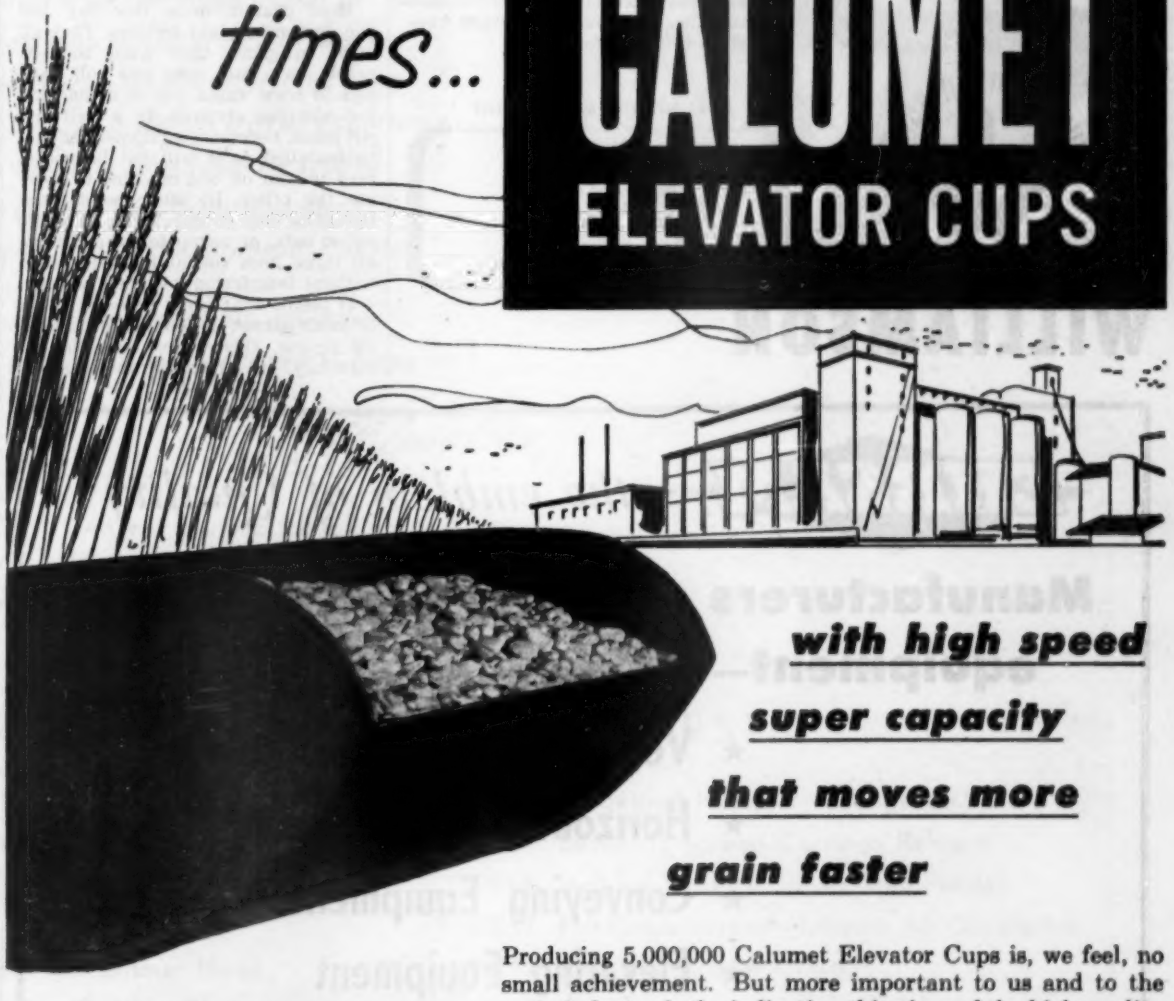

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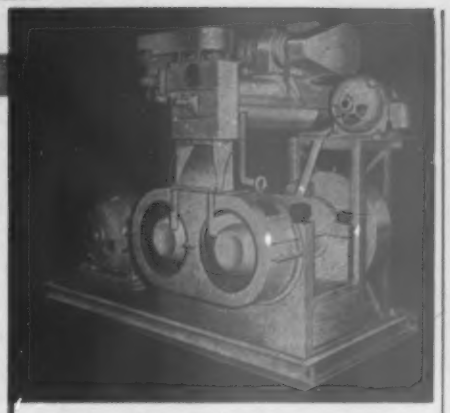

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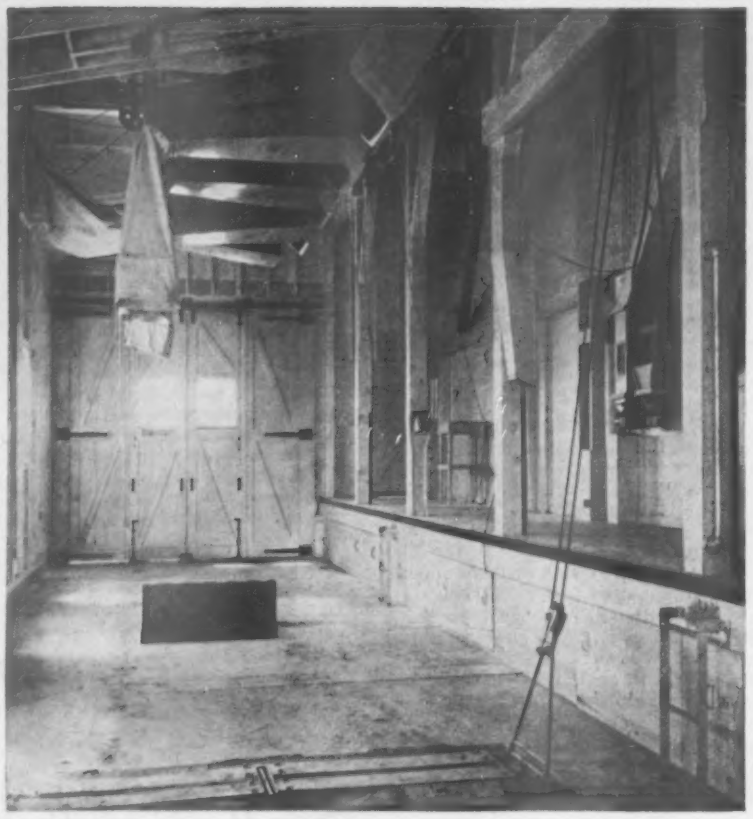

Figure 4

just means additional conveying machinery and more handling.

Most custom mills this day and age demand certain services. They all want to grind, they want to mix, crack corn, hull oats and roll oats, and in some cases put in a machine for crimping services. In a well laid out plant, necessary equipment should be installed so it will not be necessary to shut off one machine to operate the other. In other words, you should be able to grind, mix, or make rolled oats, or crimp feeds, and have all three lines run at the same time without interfering with one another.

It seems that some manufacturers of feeds cannot get enough bulk bins. Of course, this varies according to territory, but all machines should be flowed so this bulk service can be rendered to the customer efficiently.

Really, the customer is the one who designs the type of building that an engineer is going to lay out or a contractor is going to build. The reason for that is this: It depends on the service that he wishes to render, and the machines that he needs in his building to render such service, and the number of bins he needs to serve these machines with raw products and the number of bins necessary to handle the finished merchandise in an efficient way.

As in large feed plants, the custom mills are not all built alike. There seldom are ever two identical mills. The demands of the territory in which the mill is situated govern the equipment and design necessary for that particular territory, so there is no such thing as a cut and dried custom plant.

Each has its own individual problems and the feed mill engineer must necessarily be relied upon to meet the requirements of the territory in which the mill is to be located.

Custom feed mill plants should be so designed that if the business in the territory warrants the installation of additional units, it can be done without tearing the building apart to do so.

Care also should be taken to see that all machinery is placed so as to give the maximum amount of work floor space. Bagging units must have sufficient space to adequately take care of the bagging without having everything cluttered up around this unit.

Proper designing means efficiency, and efficiency is acquired through ease in operation.

Air Pollution Symposium

PALO ALTO, CALIF. — The 3rd National Air Pollution Symposium will be held April 18-19, 1955, at the Huntington-Sheraton Hotel, Pasadena, Cal.

Sponsoring the conference is Stanford Research Institute. Co-sponsors are California Institute of Technology, University of Southern California, University of California at Los Angeles, Southern California Air Pollution Foundation — all of Los Angeles—and the Air Pollution Control Assn., Pittsburgh, Pa.

General chairman of the symposium is Dr. A. M. Zarem, manager of SRI's Los Angeles division. Dale H. Hutchison, manager of the institute's air research section, has been named chairman of the program committee.

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A New Pellet System

What Should It Include? What Are Its Problems?

By Lowell Judd
Albers Milling Co.
Kansas City

In recent years, the formula feed industry has experienced an abrupt change in customer requirements. Feed in mash form was, at one time, the only type of feed manufactured. Then, in the mid-thirties, a new concept of feeding was introduced to the industry; that was pelleting.

Expansion and use of the pelleting idea grew steadily for about 10 years until World War II when an ensuing scarcity of materials curtailed the production of pellet mills. Shortly after the war, crumbled feeds were introduced to the feed industry. This transition added greatly to the overall demand for feeds in pelleted form, so that, at the present time, pellets, cubes and crumbles comprise between 50 and 60% of all feed sales.

Equipment and Flow

As a result of the great emphasis being placed upon nutritional research by the feed and other related industries, it is necessary for feed manufacturers to be prepared to produce many different types of feeds for an efficient feeding program.

In order to do this in a competitive manner on a pellet operation, it is necessary to maintain a constant flow of feed from the mixers to the pellet mills at all times. This may be accomplished by providing at least two storage bins above each pelleting system, the size of the bins to be determined by the number of pellet mills in the system.

In this manner, provision is made for quick changes from one feed to another, resulting in a minimum of non-productive operating time. A spout magnet should be placed ahead of each supply bin to remove any metallic materials which wou'd be harmful, not only to the pelleting equipment but also to the quality of the finished product.

The number of pellet mills in any operation is determined by the amount of finished product desired. For the most efficient production in our present day method of operating, it is necessary to utilize a high-speed type of mill. There are numerous reasons for specifying a high-speed mill over a conventional type of mill. Some of the reasons are as follows:

1. Increasing Cost of Labor—Labor costs are constantly increasing. There is only one way by which this rising cost may be offset—that is, by increasing the output per man hour. This can be accomplished only by the use of high-speed equipment.

2. Power—The kilowatt hours used per ton of feed produced is greatly decreased when operating a modern high-speed pellet mill.

3. Maintenance and Repairs—Repair and maintenance costs per ton of feed produced on the high-speed mills are greatly reduced. This is due primarily to the simplicity of design and engineering advances made by the pellet mill manufacturers.

When installing any type of pellet mill, adequate suction should be provided on the mill. This will serve to reduce cleaning time, improve the general appearance of the plant and also minimize the dust hazard.

Also, a magnet should be placed so that all feed would be directed over it just prior to entering the machine. This would serve to further protect the dies and rolls from any metal which could possibly be in the mash.

As the finished product leaves the pellet mill, it should be directed over a separating device for removal of fines and any large particles of foreign material. From here, it should enter a cooler. Both the separating device and the cooler should be located directly under the mill so that it is not necessary to elevate hot pellets. Each pellet mill should be equipped with a separate scalper and cooling system. This would not only provide more efficient cooling of pellets but also keep down-time to a minimum in the event of breakdowns. It is also advisable to use stainless steel screens on the cooler and scalping devices in order to assure long life to the equipment.

Conveying Pellets

At this point, a means of conveyance from the cooler to the finished product storage bins must be provided. There are several methods by which this may be accomplished. Among these are the chain bucket elevator type, pneumatic conveying and the regular bucket elevator.

Pneumatic conveying is a new method of handling materials in the milling industry. Applying this means of conveying to a pellet operation, it is found that there are several advantages accrued by its use. Among these are the following:

(1) Additional cooling of pellets is achieved simultaneously with conveying by utilizing this system.

(2) Plant cleanliness is greatly increased by the use of pneumatic conveying.

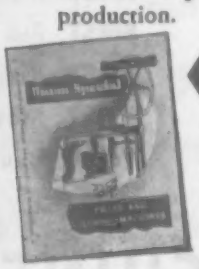
(3) The use of air conveying in a mill would replace not only the elevators but also necessary screw or belt type conveyors. This would result in

To seal the needle punctures in paper bags to prevent contents from sifting, a "filler cord" or soft cotton yarn is automatically introduced under the needle thread.

UNION SPECIAL Style 21800 H Bag Closing Machines, with Style 80600 H sewing heads, shown here, are heavy-duty, high production units for making low cost tape-bound closures on large multiwall paper bags.

A single foot pedal controls synchronized conveyor and sewing head. Automatic tape cutter on sewing head saves time and helps make operation smooth and easy to learn.

Sewing head and conveyor are quickly adjustable for varying bag heights and scale or platform height from floor. Entire unit is ruggedly built for dependable service in high-volume production.



Ask for a copy of this Bulletin

It's easy to find just the right unit to meet your individual needs in Union Special's big line of bag closing machines. Twenty-five different styles of machines! Ten styles of sewing heads! Wide choice of conveyors, controls, and types of closures. Ask for a copy of Bulletin No. 200, "UNION SPECIAL FILLED BAG CLOSING MACHINES."

Union Special MACHINE COMPANY

413 N. FRANKLIN STREET, CHICAGO 10, ILLINOIS

a reduction in power and maintenance costs.

The major disadvantage in the use of air conveying of pellets is the amount of fine material produced. Normally a minimum of 5% fines is created while in some types of pellets there is as much as 15% produced. It is felt that this problem will be minimized by future engineering techniques.

Since the regular bucket elevator is more widely used, there are several pertinent points which should be mentioned about it. First, due to the acidity and moisture of the pellets, the best type of rubberized belt should be utilized. Secondly, stainless steel should be used in the spouting, buckets, bolts and elevator leg. These will deteriorate in time, but the added life will more than offset the initial cost of stainless steel. A third factor for good operation is the necessity of ample suction on the elevator, spouts, conveyors and storage bins. This serves to remove all excessive heat and reduce condensation to a minimum.

Storage Space

The amount of storage for finished pellets would be determined by the type of packing equipment available. Assuming that high speed packers would be used, it would then be advisable to provide enough storage for holding eight hours' production from the pellet mills if production requirements make it necessary to operate the mills more than one shift. This, then, would make it possible to take advantage of the packing capacity on the day shift and eliminate the need for night shift packer operators.

Another factor to be considered in determining the number of storage bins is the variety of feeds required in the normal production schedule. In keeping with the present day trend, it is necessary to produce many varied types of feeds. Thus, it would be advisable to have a series of medium sized bins so as to make it possible to produce several different items for storage for the next days' requirements.

In the conveying and storing of pellets, a varied amount of fines is always created. If a product free of all fine material is desired, it would be necessary to provide a means of removing these just prior to entering the packing equipment.

There are numerous types of shakers and other equipment available which would adequately fulfill this requirement. However, regardless of which type of equipment is used, the disposal of fines is always a problem. There are numerous ways by which this may be handled. One method would be the conventional means of sacking the fines off manually for storage and usage at a later date. The present high labor costs make this an expensive operation. A second method would be the use of an air conveying system whereby fines are elevated directly to storage so that it could be mechanically blended into the same type of product at a later time.

Crumblizing

Demand for crumbled type of feeds has steadily increased during recent years. Therefore, a means of producing crumbles must be incorporated in any pellet system. The most recent development has been the placing of a set of rolls directly below the cooler for each pellet mill. A bypass spout is provided so that pellets may be directed around the rolls when desired. This development has resulted in savings not only of power but also in the amount of area required. In addition, the use of this compact unit eliminates the need for additional elevators, spouting and conveyors.

The size and type of corrugation for the rolls would be determined by the product desired. A La Page cut type is normally used. From the rolls the product would be directed over a grading device to remove all fines and to grade the material.

A grading device equipped with aspiration should be utilized since it produces a finished product which is much more free of fines. The fines from the grader should be spouted back to the mixing chamber of the pellet mill instead of being directed into the storage bin above the mill. This method produces a more constant mixture of feed to the machine, thus resulting in maximum production with a minimum of effort on the part of the operators.

Operating Problems

The great demand for pelleted feeds in recent years brought about the need for a high-speed mill capable of producing large quantities of pellets at the lowest possible cost. Achieving this goal brought about the following operating problems.

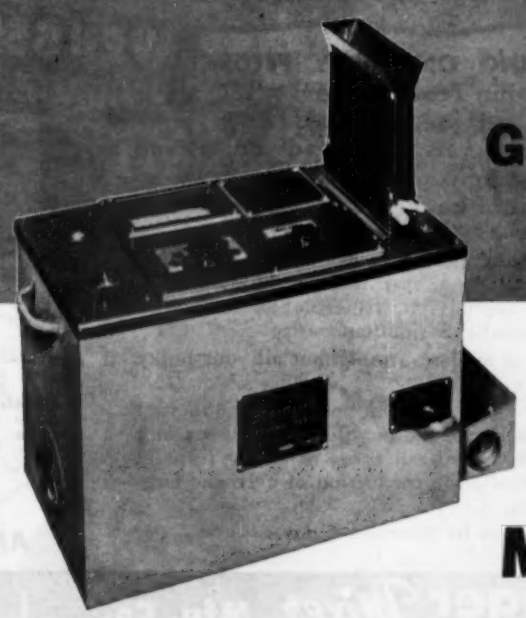
1. Roll setting—One of the important points in achieving maximum production is the setting and adjustment of the rolls. It is very difficult to give the exact details for the adjusting of the rolls due to the variation in different ingredients used in the formulae. The most efficient setting can best be achieved by following the manufacturer's recommendations and by a trial and error method. A proper roll setting on any high-speed mill will result in not only increased production, but will also increase the life of the dies and rolls. It is generally recommended that new rolls and dies be installed simultaneously for maximum production, even though in most cases the life of the rolls will be greater than that of the dies.

2. Type of die—In selecting the proper die specifications, attention must be given to the ingredients utilized in the formulae and the degree of firmness desired in the finished pellet. For example, in a formula containing a large percentage of alfalfa or in pelleting a concentrate, a thinner die should be used. It would be advisable to consult the die manufacturer to determine the correct thickness and taper of the die for production of a pellet of desired firmness and to achieve maximum production and die life.

(Continued on page 39a)

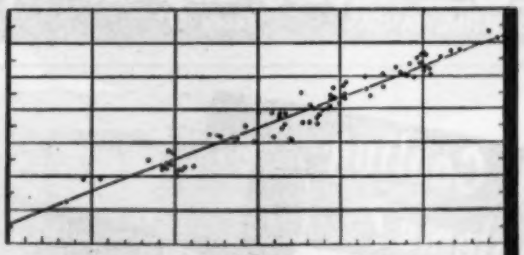
Lowell Judd
Albers Milling Co.

NOW... make a 60 second moisture test on your GRAIN-FEED-SEED with a



new model 400G

Steinlite MOISTURE TESTER



Accurate Within .25 of 1%
The extreme accuracy of the 400G Steinlite is a matter of record. Its continued reliability has been proved—with over 20,000 successful installations.

- **Easier to Operate**
  New dial-type selector switch gives immediate readings. Built-in thermometer assures proper conversions. Handy charts convert to final determinations—all in 60 seconds.
- **Trouble-Free Operation**
  Newly designed and strengthened chassis—double glass meter cover—stainless steel control panel . . . all make the new 400G the sturdiest and most dependable tester available.
- **Measure Entire Sample**
  By testing the whole sample, a more accurate moisture content of mixed moisture content grains can be determined.
- **Wider Moisture Range**
  Now you can make tests from 1½% moisture in peanuts to 45% in corn without readjusting the instrument in any way.

Money-Back Guarantee
The 400G Steinlite is guaranteed to perform as advertised, or your money back . . . and against defective parts and workmanship for a full year.

"World's Leading Supplier of Grain Testing Equipment for Over 40 Years"

SEEDBURO EQUIPMENT COMPANY

CUT TIME AND SAVE MONEY

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Please send me full information on the New 400G Steinlite Moisture Tester for Grains, Seeds, Mixed Foods, Nuts, Meal, Flour and many other commodities of consistent chemical and Granular nature.

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Grain Processing Machinery Group Contributes to Industry's Welfare

By Raymond J. Walter
Executive Secretary
Grain Processing Machinery Manufacturers Assn.

The Grain Processing Machinery Manufacturers Assn. is perhaps the baby national trade organization in the grain processing industry. Though young in years—it is now in its fourth year—it has contributed much to the industry's welfare. The need for such an organization had long been considered by many prominent machinery manufacturing executives. This need was made imperative at the time of the Korean war due to government controls. How well the association quickly and effectively proved its value in this regard with the cooperation of other industry associations is a matter of record.

There are no longer government controls necessitating united action to assure the supply of material to manufacture the machinery and equipment so vital in the producing of the nation's food supply. After all, grain processing is the basis for the nation's food supply. Without this industry, where would be the feed for cattle and poultry responsible for meat, dairy products, eggs, etc.? Where would be the flour to produce our daily bread? Where would be the seed for growing the crops? In fact, without enumerating many things, our industry is responsible for the nation's food.

We are still facing troubled times. The Business and Defense Services Administration has replaced the National Production Authority and is prepared to instantly move into action should exigencies demand. GPMMA hopes this will not happen, but is maintaining close Washington contact and vigilance to protect this vital industry of ours.

Other Activities

The association has been doing other things of a very worthwhile nature.

It has:

1. Formulated and adopted a "Code of Ethics."
2. Formulated and adopted a "Policy on Advertising, Contributions and Donations."
3. Compiled and published a "Products Chart." This graphically lists the members of the association, and the products which they manufacture for the industry.
4. Prepared and approved a "Public Relations Program."
5. Compiled and issued Analyses on Trade Relations and Labor Relations.
6. Developed and approved Standards on Horizontal Mixers and Vertical Mixers.
7. Initiated studies directed toward the development of other Engineering Standards.

Each of these progressive actions has naturally taken time and required sincere cooperation. Each of these things is designed to prove of benefit and be of practical value to the industry from time to time. Important publications in the industry have carried articles on these worthwhile accomplishments. Feedstuffs has been most cooperative in this regard and has aided materially. GPMMA and its members are deeply appreciative.

The foregoing presents briefly what GPMMA has done and how it continues to serve. These achievements are tangible. The association's activity will be expanded. Recently a meeting of the executive heads of important associations in the industry was called by GPMMA's president, George F. Thomas, in Chicago to explore the feasibility of holding a national exposition of all grain processing machinery equipment and allied products. Such expositions are held in other industries and are proving worthwhile. The expositions presented by the bakery, dairy, canning and other food industries were discussed. This project is being further studied.

Beneficial Discussions

Perhaps, the intangible benefits derived through an industry association are even more important than those which are quickly discernible. The getting together of those engaged in the industry for a mutual discussion of matters relating to the industry's and each company's mutual benefit cannot be underestimated. GPMMA holds two full association membership meetings a year. At these meetings, prominent feed and other grain processing company executives discuss industry problems.

Panel sessions composed of outstanding production engineers in the industry are held. The addresses are always reproduced and disseminated to the trade press and the association's membership. The panel discussions in which a period is provided for member participation are equally worthwhile.

GPMMA will hold its next meeting at the Edgewater Beach Hotel, Chicago, Feb. 7-8, 1955. This meeting will feature an outstanding program with prominent leaders in the industry, speaking and serving on discussion panels. The meeting will also proceed further on other association activities, with particular stress on the work on the development of engineering standards.

The past is prologue. Much has been accomplished. GPMMA can not and will not rest on past achievements. Many things remain to be done. These things will be carefully and sound y developed. This is a challenge to the progressive machinery and equipment manufacturers constituting GPMMA and to other manufacturers in the industry who may be expected to cooperatively affiliate themselves with their industry's national trade association in order that the best interest and welfare can be served.

V-BELT CARE

The high efficiency and various functional advantages of V belts are so well known that they need little comment. But V belt drives are undoubtedly subjected to more abuse than flat-belt drives in many installations. Proper selection of V belts is highly important, but proper installation and care of those belts are even more important.

NEW! LARGEST HIGH SPEED ROUGHAGE-MOLASSES MIXER
with Live Bottom Bin Forced Feeder and Motorized Variable Speed Percentage Feeder

WENGER'S 1200 SERIES ROUGHAGE-MOLASSES MIXER

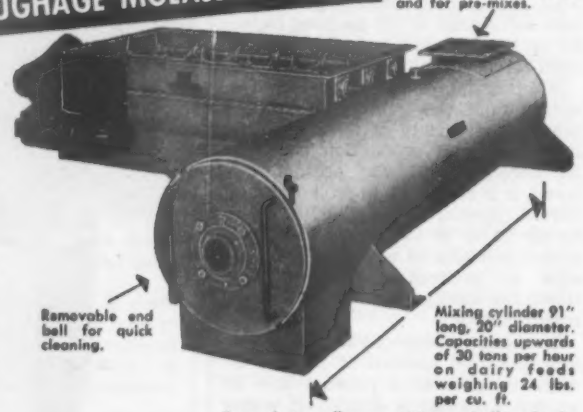
NO BRIDGING ON BULKY FEEDS
Live Bottom Bin Feeder size 53" x 32" equipped with triple auger forced feeder —driven with variable speed motor and equipped with agitator arms to prevent bridging at bottom of bin above feeder.

Ideal for molasses mixing above packers or under batch mixer collecting bins or from holding bins. Mix molasses, animal fats, fish solubles and other liquid feed ingredients simultaneously.

A perfect mix of molasses throughout all your bulky or mash feeds.

Large capacity now makes it possible for the first time to efficiently and thoroughly mix molasses in a high speed mixer with all types of bulky feeds at capacities to handle the production of even the largest mixing lines.

Write for Literature Today.


Inlet port for percentage feeding of concentrates and for pre-mixes.
Removable end bell for quick cleaning.
Mixing cylinder 91" long, 20" diameter. Capacities upwards of 30 tons per hour on dairy feeds weighing 24 lbs. per cu. ft.

Somewhat smaller capacities on bulkier feeds.

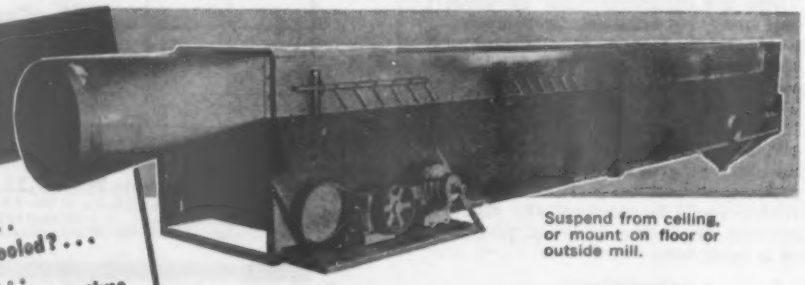
ANOTHER WENGER FIRST!

Wenger Mixer Mfg. Co.
SABETHA, KANSAS Phone 111
Standard of the Industry for Molasses Feed Mixing and Pelleting Equipment.

Pellet Cooling Problems?

- Too many fines?...
- Pellets hang up in cooler?...
- Larger cubes inadequately cooled?...
- Uneven cooling of pellets?...
- No satisfactory control of retention time of pellets in cooler?

WENGER HORIZONTAL PELLET COOLERS are the answer TO PERFECT COOLING OF HARD-TYPE PELLETS!



Suspend from ceiling, or mount on floor or outside mill.

Wenger Horizontal Pellet Coolers carry the pellets through a bath of exhaust air on an endless wire mesh belt that handles pellets from 3/16" to range cube size. Variable speed drive on conveyor provides necessary speed variation for best cooling and moisture control of different size pellets. With no vertical movement of pellets and no baffle plates in cooler, ratio of fines is greatly reduced. Cooler can be suspended from ceiling or mounted on floor. Also available in two-stage superimposed coolers, delivering pellets immediately under intake of upper cooler. Built in 14, 18, 24 and 30 ft. lengths . . . capacities of 3 tons to 30 tons per hour.

Write today for complete information

Wenger Mixer Mfg. Co.
SABETHA, KANSAS Phone 111
Producers of the Worlds-Finest Hi-Molasses Pellet Mills, Molasses and Animal Fat Mixers and Feeders

Lubrication Charts Are Valuable Aids

It goes without saying that the most important function of the maintenance man in a feed plant is to lubricate all machines and equipment in accordance with the manufacturers' recommendations.

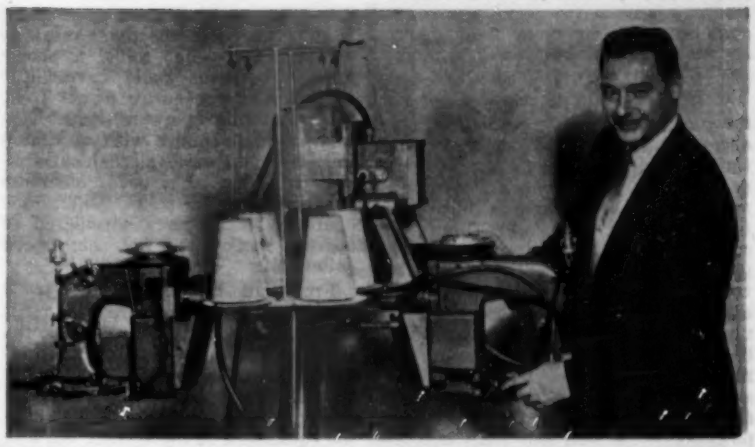
However, in setting up a good preventive maintenance program, there are certain questions to be answered. How are management and the maintenance man to know which bearing is to be lubricated next, especially when there is such a wide time interval range recommended for different bearings? When were they lubricated the last time?

In this connection, G. A. Carlson, chief mechanical engineer of the Strong-Scott Manufacturing Co., Minneapolis, recently pointed out that some firms are using lubrication charts for each machine in the plant. These individual machine charts are usually 8½x11 in. and are placed in a notebook for ready reference by the maintenance man or management. The name or number of the machine is placed on top of the chart with a column on the left side listing each point of lubrication on the machine. The next column may list the type of lubrication to be used, and following this is the column showing the recommended time lapse interval for each bearing. Following these columns the sheet should be squared off to provide spaces for the maintenance man to enter the dates he lubricates each bearing. The bottom of the sheet should have space for general remarks concerning each machine.

It will take some time to prepare such charts, but they are really necessary in a good preventive maintenance program.

You can use ordinary ledger paper for the charts if you like, or a master chart can be prepared and run on a duplicating machine. However, the blank charts must be made out for each machine to suit your individual desires.

You will be amazed at the information that can be available to you concerning your machinery from a well prepared chart system.



PACKAGING PANEL MEMBER — Participating in the special packaging session of the Midwest Feed Production School in Kansas City Nov. 15-17 will be Harry Shaw, Bemis Bro. Bag Co., Minneapolis. Mr. Shaw is shown above demonstrating the new dual head pedestal. Chairman of the packaging session which will be held in the afternoon Nov. 16 will be Lowell Judd, Albers Milling Co., Kansas City.

Mechanization Pays

When a fairly substantial amount of materials must be handled in any plant, it generally pays to mechanize, engineers often point out.

To show the value of mechanization, one industrial engineer cited this example: The cost of human energy is 100 to 500 times that of electricity or gasoline. If there is enough hand trucking now being done to make use of a lift truck, for example, for only an hour a day and the operator is busy the rest of the time with other duties, it pays to use a fork truck.

NEW!

Wenger Super 75

for the LARGER FEED MILLS

PACKAGE UNIT COMBINATION

High Molasses Pellet Mill and Feed Mixer

MOLASSES MEAL Up To 20 tons per hr.

HI-MOLASSES PELLETS Up To 6 tons per hr.

✓ One man operation of all elements of pellet production through completely coordinated controls of this integrated unit.

✓ Major savings in installation and operation costs.

✓ Every part of this integrated unit—Feeder, Mixer, Molasses controls and Pellet Extruder built for and coordinated with every other part.

Now, with this new high capacity Molasses Pellet Mill, major formula feed mills can produce the finest high molasses pellets with a single package unit designed and engineered for minimum costs per ton of production—for minimum installation and operation costs—for ease and efficiency in operation. This compact unit—the result of Wenger's 20 years of experience in producing High Molasses Pelleting Systems, is operated with Wenger's new Horizontal Pellet Cooler to produce the finest in Hi-Molasses Pellets.

EVERYTHING YOU NEED IN A SINGLE COMPACT UNIT

—Incorporating these features for maximum efficiency—for one man operation of entire integrated system.

1. Reeves Variable Speed motorized feeder.
2. Steam Jacketed High Speed Mixing Cylinder.
3. Amperes Meters for Pellet Extruder Motor.
4. Automatic Electric Molasses Level Control.
5. Dual-handed set back Molasses Meter.
6. Steam Jacketed feeder and mixing cylinder.
7. Single panel, six station push-button control for entire Integrated High Molasses Pellet System.
8. 430 gal. Molasses tank and Molasses Heating coils.
9. Automatic steam regulator and thermostatic controls.
10. Molasses temperature gauge.
11. Wenger metered flow pump.
12. Built-in Molasses agitator.
13. Wenger Super 75 Molasses Pellet Extruding Cylinder.
14. Pellet dies from ¼" to 1" pellet size.
15. Dual baggers for molasses feeds.
16. One-minute changeover from pellets to meal.

WRITE TODAY for descriptive material—installation prints, also. Ask for Wenger's new booklet on "Roughage Busting". Smaller Wenger Pellet Mills—capacities from 3 tons also available.

Wenger Mixer Mfg. Co.
SABETHA, KANSAS Phone 111

Standard of the Industry for Molasses Feed Mixing and Pelleting Equipment.

PELLETING

(Continued from page 37a)

3. Steam application—One of the important factors in achieving maximum production is the correct use of steam. For highest efficiency in operating high-speed pellet mills, it is essential to use a large amount of steam so as to bring the temperature of the mash up to a minimum of 180 degrees. Further, a regulator is required in the steam line entering the mill to maintain a constant steam pressure. This would serve to maintain a constant mixture of steam and feed which is essential for a good pelleting operation. The general practice is to use approximately 30 lb. of steam pressure; however, in some cases, a higher amount is being used with good results.

4. Crumble rolls—Like any milling operation involving a reduction in particle size, it is extremely important in the production of crumbles to have the proper corrugation on the rolls and to keep the rolls sharp at all times. Equally as important is the maintaining of the proper roll setting so as to keep the volume of returns from the crumble grader at a minimum and the volume of the finished product at a maximum. The normal yield on this operation will vary from 60 to 80% depending upon the condition of the equipment and the manner in which it is operated.

5. Molasses—The major problems involved in the pelleting of feeds containing molasses are achieving a positive flow of molasses to the mill and manitaining a proper mixture of molasses and mash. The use of either a positive displacement pump or a metering device in the molasses line just prior to entering the mixing chamber will assure an even flow of molasses. In regard to a good mixture of molasses and feed, one helpful method is the injection of steam into

the molasses as it enters the mixing chamber. This serves to break down the molasses, allowing it to mix more readily with the dry mash.

6. Oiling—As in any other milling machine, proper oiling procedures are necessary for a good operation. In the high-speed mills, two rolls are producing approximately three times as many pellets per hour as four rolls in the old style pellet mill. This fact, combined with the greater revolutions per minute at which the rolls are travelling, makes it imperative that a grease which will not break down under high temperatures be used. For best performance with a minimum of maintenance, greasing of the rolls should be done at the end of every four hours of operating time. Other portions of the mill and other equipment in the pellet system will require normal attention.

7. Personnel—Heretofore, the top personnel in most plants operated the grinders and other equipment. Now, with the use of high-speed pellet mills, this practice should be changed. Since such a large percentage of all feed produced in the plant must go through the pellet mills, a poorly trained operator could curtail the efficiency of the entire plant. Thus, the pellet mill operator should be a man of high calibre with maximum initiative and some mechanical ability. In order to achieve maximum production in the pellet system, one operator should not be required to operate more than four high-speed pellet mills.

From all indications, the trend towards pelleted and crumblized feeds will continue in the future. Thus, the feed manufacturer of today, when installing and operating a new pellet system, must give due consideration to not only the selection and flow of the equipment in the system, but also the selection and training of the operating personnel so that an efficient pelleting operation may be accomplished. In order to remain in a competitive position in the feed manufacturing business of today and tomorrow, this is essential.

LINDSEY-ROBINSON

(Continued from page 22a)

and length of service. Wage rates were raised across the board with the result that the men now are making more in 40 hours than they formerly made by working in 45 hours under the old system.

The workers are not members of any labor union. Two or three attempts have been made in past years by organizers for unions to persuade the men to form a local of a union, and the most recent organization attempt culminated in an election, under the supervision of the National Labor Relations Board, in which the employees voted by a margin of more than 2 to 1 to reject union affiliation.

C. Grattan Lindsey, Jr., is president of the company and the individual largely responsible for the modernization program. He possesses an intimate knowledge of the production problems faced in the operation of a feed mill and had a direct part in the planning and engineering of the program—a program which he estimates represents a capital investment of more than a third of a million dollars.

Working actively with Mr. Lindsey in the planning and operation of the mill has been J. M. Robinson, production manager.

Raye Mayes, an engineer specializing in cereal processing plant layout and installation; and Bernard Zenier, project engineer, worked with Mr. Lindsey and Mr. Robinson in planning and building the new mill.

The company is observing its 50th anniversary this year, having had its start in 1874 when Roanoke was known as Big Lick. James M. Gambill started the business as a flour and corn mill, and it was not until 1912 that the company began the manufacture of livestock feeds.

The firm continues to operate its 1,200-sack flour mill and a corn mill of 200 sacks daily capacity. The flour mill now produces one grade of flour, a 90% patent family flour, marketed under the original brand name: Gambill's AAAA. The millfeed from the flour-milling operation is used in the feed mill.

The company operates its own fleet of trucks to serve its franchised dealers in its trade territory. A significant amount of the total output of the feed and flour mills is shipped out by rail.

All of the feed produced is packed in 100-lb. textile bags, excepting a small volume of scratch feed packed in 25-lb. paper bags.

Approximately 70% of the total output is poultry feed.

WAREHOUSING

(Continued from page 31a)

often two men removing and palletizing one type.

After being palletized, the feed is moved by new Clark fork trucks to the storage area or to cars and trucks.

The feed is "pin-wheel" stacked, or inter-locked, on the pallets so that the bags will not move. There are "stringers" on the top edge of the pallet which make it possible for the forks to get under the load and leave the pallet. Light cardboard is placed on top of the pallet, between the "stringers" and the bags.

The fork lift trucks have multiple forks, and with the take-it-or-leave-it pallets, the feed can be picked up and moved without the pallet and deposited in a car. The cardboard under the feed protects the bags, and the forks fit under the load so that there is a fork on every bag.

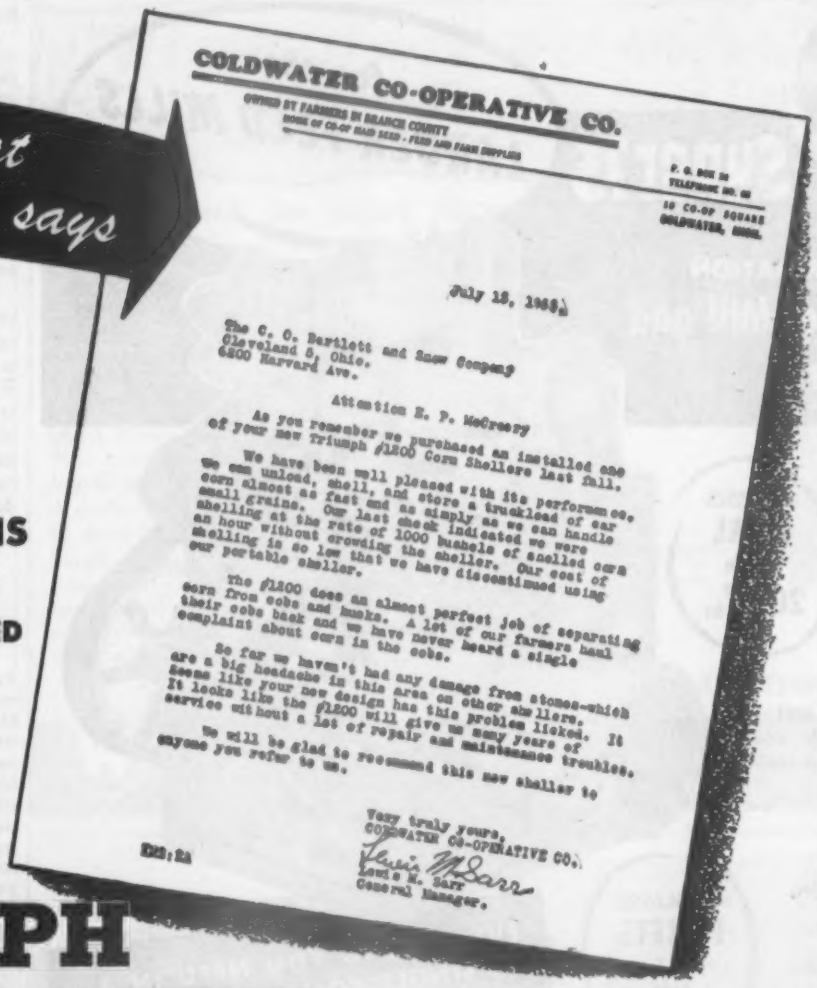
Feed to be warehoused is left on the pallets, which carry 1-ton loads, and the palletized loads can then be stacked three-high. When the feed is to be loaded into a car, the fork truck can leave the pallet and move the load and deposit it in the proper place in the car. The same procedure can be used when a load is to be moved directly from the turntable. The pallet on which the feed is piled is left behind.

Depending on the feed order and loading, there may be a man in the car to assist the fork truck operator and see that the loads are level. Also, depending on the width of the car, some bags of feed can be piled between the pallet loads to make a tight load in the car.

In the loading of trucks, roller dollies are used. A palletized load is moved to the truck dock and set down on the dolly, which can be wheeled into the truck, where the feed is taken off and piled properly in the truck.

Mr. Donnelly and Pillsbury plant and production management at Clinton—including James C. McNeil, E. S. Scott, A. L. Petersen, Earl Remen and Harry Eikenberry—planned and designed the new warehouse facilities and the new handling system and put in into operation.

Read what this User says


COLDWATER CO-OPERATIVE CO.
OWNED BY FARMERS IN BRANCH COUNTY
HOME OF CO-OP BEAD SEED - FEED AND FARM SUPPLIES
P. O. BOX 10
TELEPHONE NO. 40
10 CO-OP SQUARE
COLDWATER, MICH.

July 12, 1954

The C. O. Bartlett and Snow Company
Cleveland 5, Ohio.
6400 Harvard Ave.

Attention E. P. McCreary

As you remember we purchased an installed one of your new Triumph #1200 Corn Shellers last fall.

We have been well pleased with its performance. We can unload, shell, and store a truckload of ear corn almost as fast and as simply as we can handle small grains. Our last check indicated we were shelling at the rate of 1000 bushels of shelled corn an hour without crowding the sheller. Our cost of shelling is so low that we have discontinued using our portable sheller.

The #1200 does an almost perfect job of separating corn from cobs and husks. A lot of our farmers haul their cobs back and we have never heard a single complaint about corn in the cobs.

So far we haven't had any damage from stones-which are a big headache in this area on other shellers. Seems like your new design has this problem licked. It looks like the #1200 will give us many years of service without a lot of repair and maintenance troubles.

We will be glad to recommend this new sheller to anyone you refer to us.

Very truly yours,
COLDWATER CO-OPERATIVE CO.
Lewis M. Sarr
Lewis M. Sarr
General Manager.

EMS:Ea

Shell

35 to 45 TONS

PER HOUR OF MACHINE PICKED CORN

WITH THE

New

TRIUMPH

No. 1200 CORN SHELLER

and No. 1200 Zip Cob Blower

(Now available with shelled corn cleaning attachment)
Corn Sheller and the new Triumph No. 1200 Zip Cob Blower are the first noteworthy improvements in large capacity shelling since the days of the "husking bee". They shell the corn — separate — and remove the cobs and husks. They handle large capacities of machined picked corn quickly and efficiently, even when the corn is full of husks and high in moisture.

These machines lower shelling costs by reducing the cost of the machinery and its installation; — by eliminating the worst fire and rock damage hazards; — by reducing shelled corn losses; — by shelling the corn faster; — and the efficient, low cost disposal of cobs and husks by air. They make receiving of ear corn as easy as receiving of small grains. For full details . . .

Write for Bulletin No. 109

Above; Triumph No. 1200 Sheller and No. 1200 Cob Blower installed at Coldwater (Mich.) Co-op.
Below; Exterior View of Plant.

THE C. O. BARTLETT & SNOW CO.
6249 Harvard Avenue Cleveland 5, Ohio
Manufacturers of TRIUMPH Corn Shellers Since 1885

USE OF AIR

(Continued from page 20a)

necessary as compared with the vacuum type of system.

With but one or two exceptions, the draw-through pneumatic system will handle any feed that can be handled in a conventional bucket elevator or screw conveyor or combination of the two, and in many instances an application can be designed that would transport and deliver a product from point to point that would be impossible with an elevator and/or conveyor.

Power requirements for these pneumatic systems over elevators and conveyors would always be higher. The additional power required depends on the capacity desired and the physical characteristics of the material as well as the horizontal and vertical carry necessary. Initial cost is naturally higher, but this is usually offset by the almost complete absence of maintenance in replacement cost and lost production due to breakdowns or choke ups. As to installation costs, the draw-through pneumatic system has a distinct advantage. Except for the collector which also supports the fan, no machinery supports are required, and as all piping is fabricated to suit each individual application, the labor of installation is definitely much lower than for the installation of a comparative elevator or conveyor, which sometimes balances the higher initial costs.

In many of the feed mill installations already made, the Pneu-Vac system has ammortized its investment in a little more than a year's operation. This has been done by cutting down the dust lost at the collector to the point where the savings in material alone, in dollar value, have made it a good investment.

Typical Installation

A typical installation, for example, handles scratch grain at a capacity of 40,000 to 45,000 lb. per hour with a 40 ft. horizontal carry and a 60 ft. vertical lift with several elbows in the airline.

For this installation a 30 h.p. 3500 r.p.m. motor is direct connected and mounted in a vertical position over the fan on top of the collector. A specially designed dust collector is usually specified. It is composed of a cylinder and a long, narrow cone which, experience has taught, means efficient separation. The cylinder, being a true circle section, can readily be lined with abrasive resistant metal for extra wear resistance where required. The fan is normally mounted on top of the collector and supported by it. It is an integral part of the collector unit to simplify installation problems quite readily. At the base of the cone a rotary airlock feeder is provided to maintain the vacuum. A precision built unit with a machine bored casing and a turned rotor is a necessity. Clearance between the casing and rotor should be approximately .003 inches. This close tolerance and precision designs allows airtight operation. Any airleak at this point would throw the system out of balance and cause a dusting condition at the fan exhaust.

A point of confusion, often, in Pneu-Vac pipe systems is the major question whether auxiliary dust collection equipment is necessary. The proper answer is that it all depends. It depends on the type of the material to be handled, the installation location, and whether or not a closed system is advantageous.

If a system is installed where the air is not required at the material inlet, it can be operated closed; a return line can be used with the inclusion of a by-pass valve at the fan discharge or a filter tube located in the return line. The small air leakage in the system is dissipated through the by-pass valve or filter. Operating in a closed system, it is rarely necessary to provide a cloth filter even when handling a dusty material. In any event, the filter can be of small size, if considered necessary, as only about 10% of the air handled would be discharged through the filter.

When operating on granular material such as course ground corn no auxiliary collector is needed. Incidentally, if auxiliary collection is considered to be necessary for complete 100% visual recovery of the material handled, the top mounted fan can be designed with reserve capacity to easily handle the additional static load placed against it by the auxiliary collection, thus precluding the requirement of any booster fans.

Actually most of the simple installaations have been without auxiliary dust collection as efficiency is generally well above 99%.

Custom Engineering

Another basic question of vacuum systems is why do they all have to be custom engineered. Actually this is very much to the advantage of the miller. It is quite possible for anyone to lay out a negative pressure system that will apparently work quite well but actually would be the source of a great deal of wasted power. One of the most common mistakes in dealing with air handling problems is the use of more air and more power than is actually needed simply to be on the safe side. The criterion of a successful air conveying system is not only the fact that it works but also that it works efficiently.

Many factors must be taken into account by the designer: Type and density of the material to be handled is highly important; the necessary horizontal carry and the vertical lift must be considered. The amount of elbows in the line is highly important. Perhaps in no other piece of feed milling equipment is the know-how and experience of an engineer as important.

To illustrate just one example, a single elbow with a 4 ft. radius and with the usual condition of air traveling at approximately 5000 ft. per minute will actually cause the same loss when handling grain at a coefficient of friction of .3, as it would to lift the grain 96 ft. vertically. However, for simple systems such as from a grinder or a cutter, horsepower requirements on a 30 to 40 ft. lift with one elbow could be approximately calculated as 1 h.p. per 1,000 lb. of material per hour to be handled.

Bulk Car Unloading

In the last few years, probably the most interesting application of the draw-through pneumatic system has been its use in bulk car unloading systems. In these systems, the fan and collector are mounted in the head house and an inlet pipe is run down to the car unloading area. From this inlet pipe, flexible hosing is provided and carried into the car. In the car a specially designed car unloading nozzle is provided to unload the feed or grain. Generally these car unload-

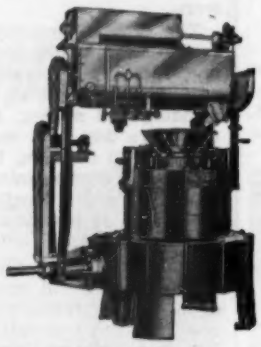
(Continued on page 44a)

Here is an interior view of a car with grain being unloaded. A specially designed nozzle on the flexible hosing is used to unload feed or grain.

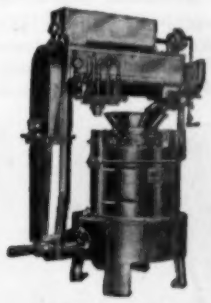
MORE PELLET PROFITS Helm with a ROTARY PRESS

- Simple in design and operation.
- Pellet sizes can be varied by changing dies.
- Sturdy and fool-proof—untrained men can operate machine.
- Will handle low moisture content if preferred.
- The two directions of travel make these machines especially suitable when a very high fibrous content is present.

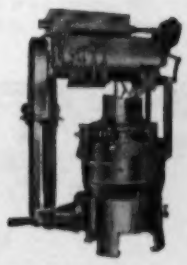
A SIZE FOR EVERY NEED



JUMBO MODEL
75 h.p.



SENIOR MODEL
40 h.p.



JUNIOR MODEL
25 h.p.

HELM LINE OF PELLET MILLS

The machine with original vertical circular dies—two directions of travel. Our activities have been mostly confined to the cotton seed oil mill industry. We now offer our proven lines of pellet machines to the feed mill industry. We also manufacture a large capacity pellet machine with an absolutely new principle . . . for manufacturers who desire large capacity of pellets in two sizes. The dies cannot be changed, but your cost per bag of pellets is reduced by using this new machine.

Write today for descriptive folder giving full details on the Helm Rotary Press. We invite your inquiries regarding any mill machinery.

HELM MANUFACTURING CO.
COTTON SEED OIL MILL MACHINERY
2550 N.E. 28th ST. PHONE MARKET 7223 FORT WORTH 6, TEXAS

Roddis Feed Mill

On the left is an exterior view of one side of the Roddis Feed Co. mill. On the left may be seen the two driveways on the custom grinding and mixing side of the plant. Over the left driveway is a Hess corn drier. Over the second driveway, hanging underneath the steel headhouse, is the cob tank. Directly behind the railroad crossing sign is the belt type car loader. The bulk bins for soybean meal and other bulk ingredients are in the metal clad portion extending up through the brick warehouse. The metal clad tower for elevators for the new mixer, scale and pellet mill is in the extreme rear. On the extreme right, the fork lift truck is placing a pelletized load of ingredients, moved from the warehouse across the street, onto the dock. Sacked ingredients are stored in the new warehouse across the street and brought over to the mill each day for the next day's mixing operations. On the right, behind the brick warehouse, may be seen the top of the Roddis seed cleaning plant.

Retailer Finds Plant Improvements Pay

The city of Rochester, Minn., is known throughout the world as a medical center—the home of the Mayo Clinic and famous doctors. But it so happens that this busy southern Minnesota community is also the trading center for a prosperous diversified farming area. And not very far down Broadway from the progressive medical establishments is another progressive establishment—the Roddis Feed Co., operated by Eldon Roddis.

Not all of the examining and diagnosing in town are done in the clinic and hospitals. Mr. Roddis does a considerable amount of it himself—on his retail feed manufacturing operations, for example. As a result, he is known throughout the feed industry in the Northwest as a leading retail feed manufacturer and merchant.

Recognizing its importance in efficient and economical operation, Mr. Roddis has put particular emphasis on his feed production facilities and techniques. Evidence of this exceptional interest on the part of a relatively small manufacturer is found in the fact that Mr. Roddis regularly attends the Midwest Feed Production Schools.

The Roddis plant is not a new one—that is, the main part of the plant is not new. But it is an example of how a small feed manufacturer can modernize and improve, reflecting advances in feeding and in feed production and merchandising.

Additions, Improvements

Keeping up with the advances and increased business in recent years, Mr. Roddis has added onto his plant, added storage facilities, installed a considerable amount of new equipment, and built bulk ingredient storage space. Just in the past year, he has built a new warehouse and installed a new dust collecting system, a new mixer a new pelleting set-up and a new automatic bagging scale.

Mr. Roddis recognized what these various improvements could do and invested in them. The modernization has increased production speed and efficiency and brought clear-cut savings in labor and other costs.

Many feed men who visit the mill call it one of the most compact, fast and efficient small plants they have seen.

The Roddis company is strictly a retail operation, but it is a good sized one, making a complete line of its own feed as well as doing custom grinding and mixing. Also manufactured are dog food and a calf milk replacer. In addition, the firm has a substantial seed cleaning and treating operation, and it handles other products, such as fertilizer. It also buys and sells grain.

A description of the mill and its improvements will reveal a number of interesting features and will show how the firm has met various problems and needs with new or improved equipment and facilities.

The oldest part of the plant was built originally in 1929. Eldon Roddis' father, David Roddis, now semi-retired, started the present feed and seed business in 1938, and Eldon entered the business in 1942 after 17 years with the International Harvester Co.

The company buys all ingredients in carlots, and some of them—soybean meal, linseed meal, millfeed and molasses—are purchased and handled in bulk.

Custom Operations

The mill has a substantial custom grinding and mixing operation. For this there are two driveways on one side of the plant, each with a grain pit and an ear corn pit and each with a truck lift. Each driveway is served by a corn sheller.

In connection with the corn shelling operations, the mill has, over one of the driveways, a steel cob hopper. This is divided into four bin sections, each 3 x 5 ft. and 25 ft. deep, with four straight sides and a trap door on the bottom for discharge of cobs into a truck. Each section holds a truck load of cobs.

Ear corn which is ground goes through a Jacobson Universal hammermill. There are a 75 h.p. motor on the grinder and a separate 25 h.p. motor on the blower. This 25 h.p. motor was added a year ago to increase capacity. Other equipment includes a Munson attrition mill and a Eureka corn cracker.

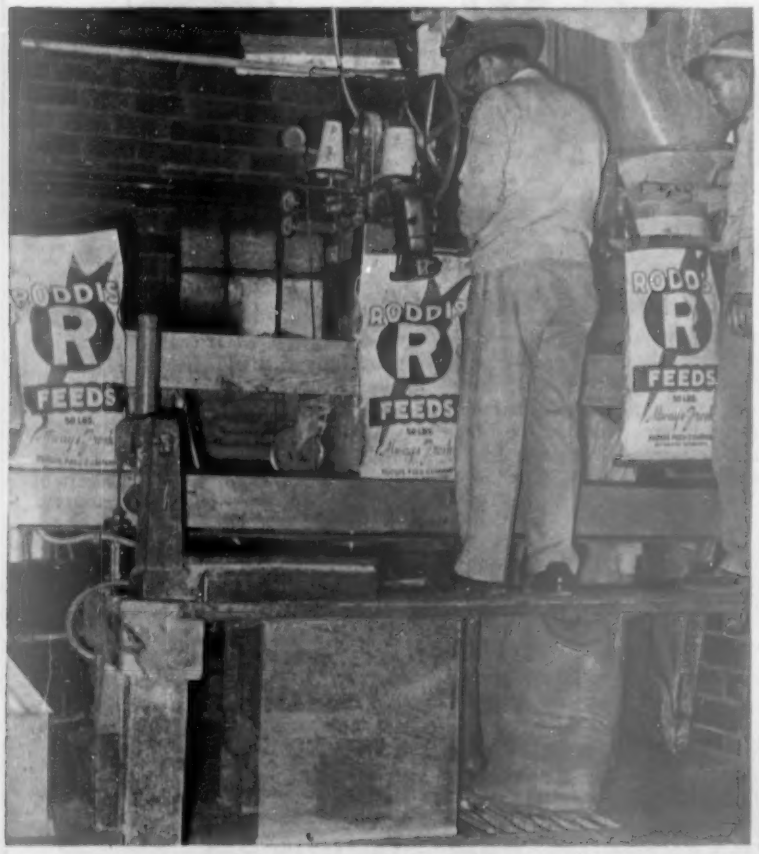
Custom ground grain can be delivered to the farmer's truck in bulk or it can go directly to one of two mixers—Strong-Scott 2-ton and 1½-ton horizontal mixers, which are in the basement, with one elevator between them. The mixed feed can be elevated after mixing directly to the farmer's truck in bulk or to one of two sacking hoppers located next to the door for easy loading. Bulk ingredients—including grains, soybean meal, linseed meal—for custom mixes are weighed out in a hopper scale, elevated and spouted into either mixer. Other ingredients are dumped directly into the mixers through grates on the work floor. There is a hopper scale available to weigh the farmer's grain in case he wants to split his mix between, say, chicken and hog feeds, or in case he wants to buy grain to add to his mix.

One of the recent mill improvements was the installation of a dust collecting system piped to elevator legs, screw conveyor and mixers. The system eliminates 90% of the dust formerly in the plant, Mr. Roddis said. A 5 h.p. motor is used with a standard cyclone dust collector. It was a relatively inexpensive installation, with the sheet metal work done by a local sheet metal man, Mr. Roddis said.

Bulk Ingredient Storage

As the amount of soybean and linseed meal used by the plant increased in recent years, it was felt it would be more economical to buy and handle these ingredients in bulk. Therefore, out of some of the existing warehouse space adjacent to some old crib bins, they took enough room to erect four new crib bins for bulk ingredients. These extend through the warehouse roof up next to the old headhouse. There were two old elevator legs in the old elevator, and one was converted for use in the bulk ingredient system to handle bulk soybean meal, linseed meal and middlings. These four new bins hold 10 tons each. Since they were located next to the old cribbed elevator, it was an easy matter to convert two of the old larger bins for bulk ingredients also.

Placed under the four new bins was a 2-ton hopper scale. And under the scale, a screw conveyor was installed. This runs from the railroad track directly under the new hopper scale to the bulk elevator leg and is used both to unload bulk cars to the bulk ingredient bins and to charge the mixers with the bulk ingredients, which means that only one of these two jobs can be done at a time. Controls for the scale and the gates



This picture is a view of the new bagging installation for Roddis brand feeds. As may be seen here, the conveyor and the platform for the operators are elevated so that feed can be taken and loaded onto two-wheel hand trucks without lifting the bags. In this picture, Eldon Roddis, owner of the mill, is operating the sewing unit.

under the bulk bins are extended up to the first floor so that they can be operated from there.

Manufacture of the Roddis company's own feeds is an extensive operation, and facilities separate from the custom mixing service are available for mixing, pelleting and packing the firm's own brand of feeds. A new mixer, new pellet machine and new automatic bagging scale are included in the new improved facilities for feed manufacture.

Bulk ingredients used in these feeds are weighed out in the 2-ton hopper scale, and then all that is necessary is to start the screw conveyor and open the gate under the scale. These ingredients are then conveyed and elevated and dropped into a 2-ton garner bin above a new 2-ton Howell horizontal mixer in the basement.

Grains can be weighed in another hopper scale before being ground directly to the mixer. There is a grate in the work floor for dumping other ingredients and directly into the mixer.

When the mix is completed, the material is elevated by a separate elevator and discharged into bins above the molasses mixer, pellet mill, or the new Richardson E-50 electric bagging scale equipped with a pneumatic bag clamp. After the bag is filled, it drops to a belt conveyor and is sewed with a Union Special sewing machine.

One of the features of this installation is that the conveyor is about 4½ ft. above the work floor, and the operators stand on an elevated platform. With the conveyor 4½ ft. above the work floor, the feed can be taken and loaded onto two-wheel hand trucks without lifting the bags.

The scale is rated at 8 to 10 bags a minute. The Roddis mill operates it under normal conditions so that two tons of feed are sacked off in 50-lb. papers and stacked in the nearby warehouse area in 12 minutes. Four men are used—one on the sacker, one on the sewing machine and two men taking the feed away and piling it.

A new Sprout-Waldron pelleting set-up has been installed in a new addition to the plant. The pellet mill is a 25 h.p. junior model, with a capacity of up to 3 tons an hour. The pellet mill is 4 ft. above the work floor level, and, with the basement sapce below, the installation is such that the hot pellets are not elevated but go directly down to the cooler and then are either crumblized or passed over a shaker and dropped into a pellet leg; then elevated to a 4-ton bulk storage tank or to a bin above the sacking scale. Fines from the shaker are elevated by air, using the same fan as is used for cooling, and enter the bin over the pellet mill. Steam for pelleting comes from the city steam heat system which also is used in heating the mill.

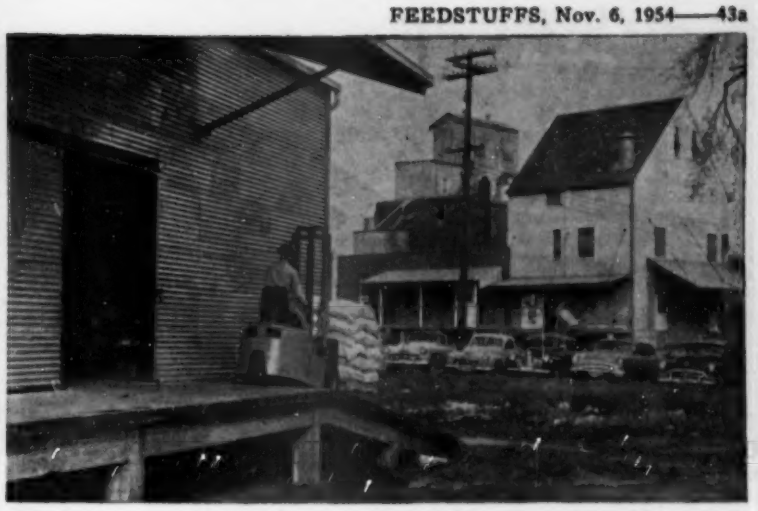
Another feature of the Roddis mill is its handling of molasses. Bulk molasses is unloaded by gravity from cars directly into a 12,000-gal. concrete storage tank in the basement. There are no heating problems with this storage system. Molasses is pumped from this tank into a 500-gal. work tank ahead of the Wenger mixer. In cold weather spent steam from the mill's steam heating system is routed through the tank and keeps the molasses at a satisfactory temperature for mixing without any cost for the steam. Molasses feeds are sacked off from the mixer in burlap bags.

Not a great deal of bulk feed is used in the Rochester area, but a spout for bulk loading is located above the driveway on the custom mixing side of the mill, and this can be used for any feed sold in bulk. The feed is run directly from the mixer into the truck.

A loading dock adjacent to the warehouse area and office and opposite the custom mixing side is used by farmers picking up finished bagged feeds.

One of the features of this plant is the separation of custom mixing operations and the manufacture of the firm's own feeds. While custom work is being done, the mill can still manufacture its own line.

The Roddis firm has found that it really pays to have machinery parts on hand and to keep machinery in good repair. They have one man who spends all of his time in maintenance work. The maintenance man just recently rebuilt one of the corn shellers. The firm is now building a new workshop for maintenance work.



In the foreground of this picture may be seen a portion of the new warehouse, 50x80 ft., with the 48-ft. loading platform. The 1-ton Hyster fork lift truck is taking a ton of ingredients over to the mill, across the street. The concrete block building on the right side of the mill is the seed cleaning plant, with its own driveway and pit on the right (east) side. The picture also shows the 60-ft. loading platform on the south side of the feed and seed plants.

New Warehouse

One of the major improvements during the past year was construction of a new warehouse. With the ad-

GRAIN EXPERTS

Call It SENSATIONAL

model 4
ARID-AIRE dryer!

IT'S PACKED with EXCLUSIVE FEATURES!

Big CAPACITY Low OPERATING COST

DELIVERED Completely ASSEMBLED ...ready to run!

NOW YOU CAN LEASE AN ARID-AIRE WITH option to buy!

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Advertisement

New Schutte Instant-Screen-Change Hammer Mill Shatters Performance Records

Built to fulfill demanding work schedules, new Schutte Instant-Screen-Change Hammer Mills are setting new performance standards with a combination of power-saving and time-saving features.

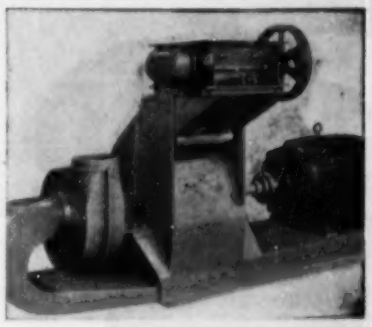
Screens can now be changed in *seconds* while the mill is running. A wide range of materials may be handled and various grist sizes produced with uninterrupted efficiency.

UNMATCHED RUGGEDNESS AND STAMINA

With special heavy steel construction throughout, welded at every stress point, Schutte Hammer Mills are designed for trouble-free operation in ever-active, continuous service.

FASTEST KNOWN SCREEN CHANGE

Withdraw one screen . . . slide in another. It's as simple as this with Schutte's newest Hammer Mill. Cover remains closed at all times. There is no exposure to whirling hammers.



AVAILABLE IN 5 SIZES

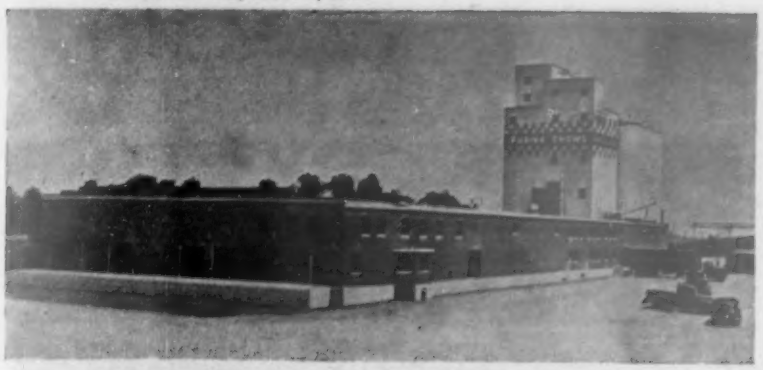
Meeting a wide range of capacity requirements, Schutte Heavy-Duty Instant-Screen-Change Hammer Mills are built in both belt driven or direct driven models. Unit shown is Model 48 with optional crusher-feeder.

PROVIDES MULTIPLE ADVANTAGES

The advantages of this new hammer mill are numerous. Among them: Clean sweep suction assures the proper air flow for most efficient grinding. Schutte Pat. Adjustable Hammers (standard equipment) provide 10 quickly-positioned cutting surfaces. All parts are quickly accessible for highly serviceable simplicity. Compactness enables installation close to walls or in tight corners.

NEW BULLETIN
GIVES COMPLETE DETAILS

Informative literature describing the complete line of these new Schutte Mills is promptly available without cost or obligation. Write: Schutte Pulverizer Company, 27 Clyde Avenue, Buffalo 15, N. Y.



NEW PURINA FEED MILL—Shown here is the new feed plant recently opened by the Ralston Purina Co. at Gainesville, Ga. The mill will have a capacity of approximately 75,000 tons annually. Company officials said the mill has been built to serve better the growing north Georgia broiler area.

vent of more lines of feed and with increased business, larger stocks of finished feeds were necessary, crowding raw materials out of the existing building. So, for storage of sacked ingredients, they built a new steel warehouse, 50 by 80 ft., on a lot across the street from the mill. The warehouse was designed so that a fork lift truck could be used in handling the ingredients. Bags are put on pallets, and the new one-ton Hyster fork lift tractor moves the palletized loads and piles them three loads high in the warehouse. This has speeded unloading operations and saved man-hours of labor.

The same fork truck is used to move the palletized loads of ingredients across the street to the mill for mixing. Each day the necessary ingredients for the next day's mixing are brought over and placed in one part of the mixing room.

On one end of the mill is the modern seed cleaning and treating plant. This operation has its own driveway, pit, elevators, bins and work floor area and storage space. Locally grown seed is handled here. A new fully automatic seed treater is being installed now.

USE OF AIR

(Continued from page 41a)

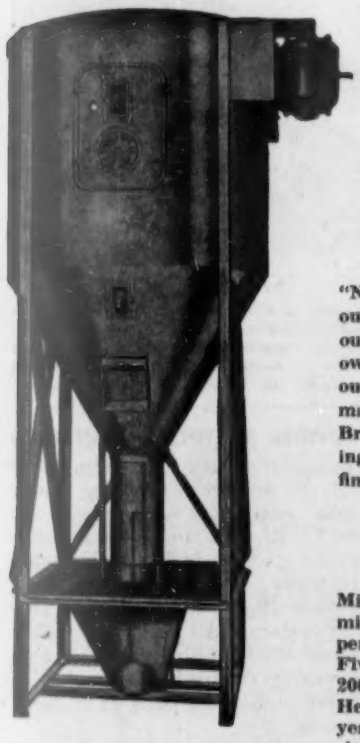
ing systems incorporate a two stage fan again mounted vertically on the collector with a double ended motor in between the two fans. The larger systems usually incorporate a 75 h.p. motor. Capacity, naturally varies with the lift and with the material being handled, but 30 to 40 tons of grain per hour has been proven to be an average capacity. In some cases, car unloading systems have been set up with several inlet or pick up spots along a railroad siding.

Another adaptation of a conventional Pneu-Vac system is the combined car unloading and transport system. In this type of system, there are two separate inlet systems, working on the same collector. One from the railroad car to the collector and another from the bulk storage bins in the mill again to the collector. The systems are switched back and forth by means of a two-way valve, usually chain operated. The general advantages of a negative pressure system over a positive pressure system are as follows: for high capacities and long runs, horsepower requirements are frequently only 30 or 40% of those for pressure systems under corresponding consideration. Characteristically high stream loading of air to material is reflected in lower air removal from the room, sometimes extremely important, especially in winter, smaller filter bag requirements with fine powders, and smaller pipe diameters as compared to pressure systems.

Self cleaning characteristics of a vacuum system are an important feature where sanitation or avoidance of inter-contamination of products is essential. Physical obstacles to conveying are usually non-existant beyond the small space requirements required for a pipe of the proper diameter.

Also, the conveying line does not necessarily have to be in a straight line or at right angles, nor does there have to be provision made for supporting of the conveying equipment other than the collector in the head house. The draw-through pneumatic system features ease of installation, net space consigned and minimum of moving parts as well as reducing possible fire hazards. It reduces maintenance, increases efficiency of conveying and reduces to a great extent the material loss in conveying.

The next decade should be even more air conscious.



BROWER
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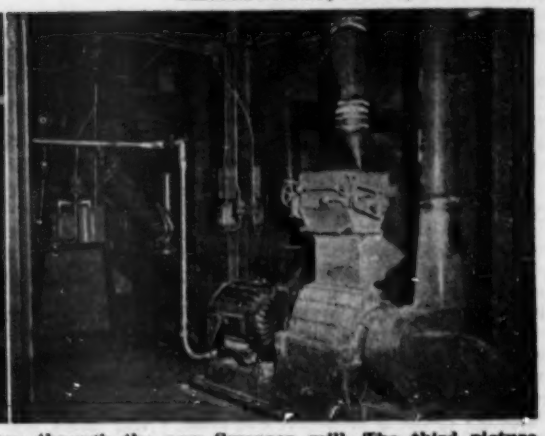


Shown here in the first picture is Kirk H. Hale, president and general manager of the Swanson operation at Fayetteville. In the second photo are twin Hayes & Stolz horizontal mixers of 90 cubic feet capacity, handling 10 to 12 tons per hour through the new Swanson mill. The third picture shows the grain cleaning and distribution area in the basement of the mill. The Jacobson hammer mill handles materials from the grinding bins.

New Swanson Company Plant At Fayetteville Is Specialty Mill For Broiler Feed Manufacture

By MARTIN E. NEWELL
Feedstuffs Editorial Staff

One of the interesting and unusual new feed mills in the Southwest is the recently completed plant of the C. A. Swanson & Sons Hatchery Co. at Fayetteville, Ark.

Here is a compact, highly automatic mill, designed primarily to handle broiler feeds and with little or no need for diversification of product. It is a special type of mill designed for a specific purpose.

The Swanson plant, which went into operation late in September, is located in the heart of the big broiler producing area of northwestern Arkansas. The operating company is a subsidiary of C. A. Swanson & Sons, Inc., large packers of poultry and egg products, whose principal office is Omaha, Neb. The Swanson company also has another feed mill at Malvern, Iowa.

Large Poultry Operation

The Swanson operation is among the largest in the Arkansas area, the company having an average of about 1,000,000 chickens on feed all year around.

One of the largest and oldest in the poultry packing business, the firm got its start as the Jurpee Commission Co. in 1898. Eventually, the company came into the control of Carl Swanson and changed its name. It is now operated by Mr. Swanson's sons, Gilbert, who is chairman of the board, and Clark, who is president.

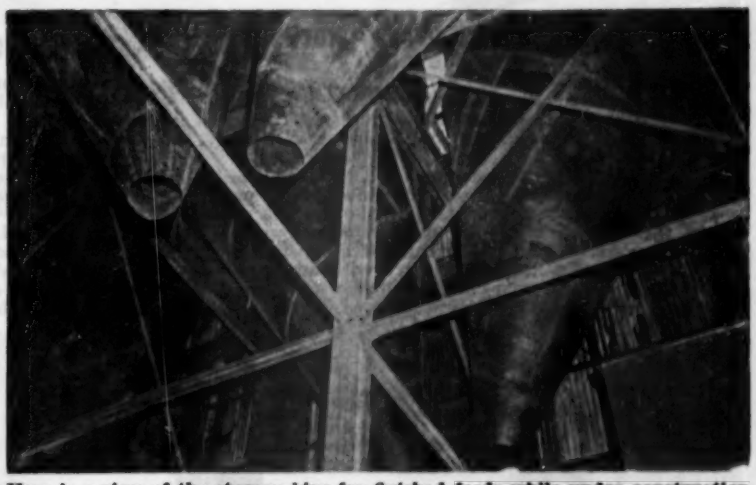
In recent years the company has attained a spectacular growth in the marketing of canned and frozen poultry and recently has been selling a complete frozen dinner under the name of Swanson's turkey dinner and Swanson's chicken dinner. The company's packing plants are located at Modesto, Cal., Fayetteville, Ark., Salisbury, Md., and Worthington, Minn.

The hatchery and feed milling operation at Fayetteville began in 1949 with the purchase of the Hale Hatchery. The following year the company began merchandising feeds to its poultry growers under its own label, having the feed manufactured by another company in the area. Now, for the first time, it will produce these feeds in the new mill.

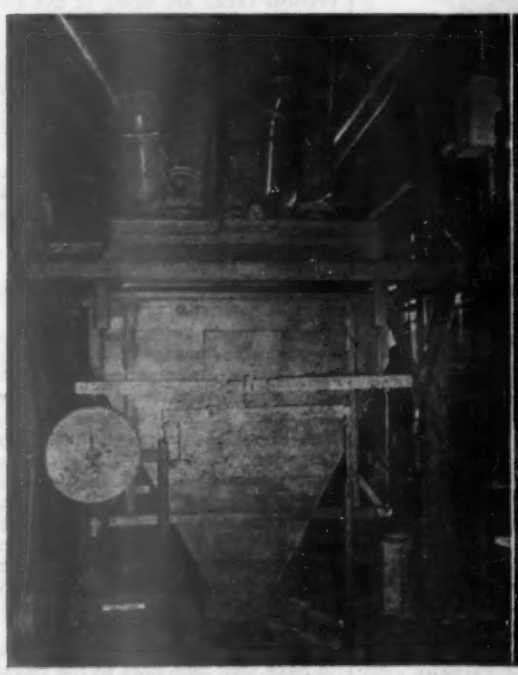
Kirk K. Hale is president and general manager of the Fayetteville subsidiary, and is in over-all charge of the new mill. Mr. Hale has been in the hatchery and feed business all of his life, starting in Colorado in 1921. In 1937 the Hale Hatchery was opened in Fayetteville, and he continued as manager of the enterprise when it was purchased by the Swanson firm in 1949. Mr. Hale has taken a very active part in the development of northwestern Arkansas broiler production and in 1951 was named "Man of the Year in Arkansas Agriculture," an honor awarded each year by the Alpha Zeta Agriculture Fraternity of the University of Arkansas.

(Continued on page 48a)

New Feed Plant of the C. A. Swanson & Sons Hatchery at Fayetteville, Ark.



Here is a view of the storage bins for finished feeds while under construction in the Swanson feed plant at Fayetteville.



The first photo shows the hopper scale above the mixers—a Fairbanks Morse scale. The second picture is a view of the elevators to the mixing bins. No floors above the first floor are planned in the Swanson mill. The third photo is a view of the plant's grinding bins while under construction.

Facilities for Handling, Mixing Fats Into Feeds

EDITOR'S NOTE: The increased use of animal fats in feeds has brought many questions about facilities for and methods of storage, handling and mixing of fats. To help answer some of these questions, the American Meat Institute Foundation has prepared information on specific points for feed manufacturers. The accompanying article is adapted from information prepared by Dr. O. H. M. Wilder of the Meat Institute Foundation.

This discussion of the handling and storage of fats and the mixing of fats into feeds is predicated on the assumption that all tallows and greases to be used in feed have been properly rendered, settled, and are reasonably free of sediment and moisture, and that they have been effectively stabilized against the oxidative type of rancidity.

One of the principal hazards in the storage of fat is moisture. Fat must, therefore, be dry and kept dry until used.

Storage

Tallow and grease will be received from the producer in tank car or tank truck shipments or in drums. If delivered by tank car or truck, storage facilities must be provided.

The most important point to remember in storing fat is to keep it dry. The enemies of stability of fat are air and water, and by far the most important adverse factor in storage is water. Clean, dry fat stored at ordinary temperatures in clean tanks will keep very well.

Storage tanks can be either horizontal or vertical. Second hand tank cars are sometimes used. Design of the tanks and their foundation depend upon the capacity desired. All tanks should be equipped with a 2 in. free-vent at the top, with the vent end of the pipe turned down for weather protection.

Storage tanks should be completely emptied occasionally for cleaning and, in this connection, thought should be given to selection of size of storage tanks. Unnecessarily large storage is not only expensive but undesirable. Two smaller tanks are better than one large one. When two tanks are available, failure of a steam coil or other similar storage problem will not result in stopping the fat handling operation since the other tank may continue to be used. It will also facilitate tank repair, cleaning, etc., without interfering with production.

The total storage capacity must be determined by the rate of usage and availability of supply. It must be remembered that fat, like other foods, does not improve in storage. It follows that storage should be limited to the minimum consistent with supply and rate of usage. Oldest stocks on hand should be sent to production first.

A 2 in. outlet pipe on the bottom of the tank, preferably set into a small sump, may be used for drawing fat out of the tank.

Fat is best stored at as low a temperature as possible to keep it in best condition. If large amounts are to be used each day, the fat in storage may be kept at about 15° above the melting point or at approximately 120° F., which in the summer months should be warm enough to mix into feed. An insulated tank will greatly aid in maintaining this temperature and reduce the amount of steam heating required.

An opening should be provided in the storage tank large enough to admit a man for periodical cleaning. Covers must fit water tight.

Heating Fat in Storage

Tallows and greases have melting points around 100° to 110° F. In the colder month of the year fats will be quite solid when delivered. If shipped in tank cars, steam will be used to melt the fat before pumping to storage. Normally, 180 ft. of 1¼ in. pipe coil will heat and melt 60,000 lb. of fat in 10-12 hours from 0° to 140° F., using 80 lb. steam pressure. As a rough calculation, it will require around 11 to 15 horsepower on the boiler to supply steam to melt a tank car of fat in about 12 hours if the fat is at about 0° F. when delivered. In warmer weather a lesser amount will be needed and, once melted, only a small amount of steam will be required to maintain the fat in a liquid condition.

A heating device must also be installed in the storage tank. If a second hand tank car is used for storage, it must be set level so that the coils will drain to prevent freeze-up in cold weather. In vertical tanks, a steam coil loop should be run up to a point above the top level of fat or the steam pipe may be led into the tank at the top and down near one side to the heating coil at the bottom. This loop is to melt a channel of fat which will permit circulation of liquid fat and prevent high pressure build-up at the bottom under a solid surface.

The steam heating coil should be built up with 1¼ or 2 in. iron pipe on about 18 to 24 in. centers and placed on blocks several inches off the bottom. Heating coils in some vertical tanks are made in the form of a spiral belt around the inside of the tank just above the bottom. In any type of installation the coils must be leveled to drain free so that no condensate collects in the loops to freeze in cold weather. Whenever heating stops, it is good practice to disconnect the heating coil and blow out any condensate with compressed air, leaving the coils disconnected until again needed.

Electric Heaters

If steam is not available in the plant or if the fat is received in drums, it may be more convenient to use electric heaters to melt the fat. An electric immersion type heater or a drum heater may be used. Wherever electric heaters are used they should be thermostatically controlled and installed in such a way that there is no localized over-heating in any part of the heater that is not covered by fat. Fats are flammable and will burn if brought into contact with an overheated electric heating element. When properly installed, electric heaters are perfectly safe and very convenient.

In some plants it may be necessary to have long pipe lines to the storage tank or from storage to mixing area. A steam or electric tracer line may

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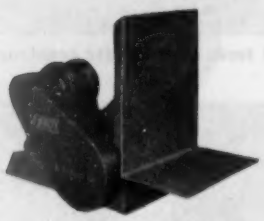

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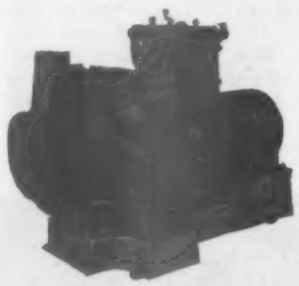

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be installed on the underside of the fat line and the twin lines covered with pipe insulation. A ⅜ in. copper pipe may be used as a steam tracer for heating the fat lines or an electric heating tape or cable may be used. If an electric heater is used, it should be thermostatically controlled to prevent over-heating. A steam tracer line should be installed with all offsets around flanges, valves or other fittings, in a horizontal plane to prevent low pockets in which condensate might collect and freeze in cold weather. It is advisable to blow out this tracer line when not in use to prevent accumulation of moisture.

Piping, Valves and Fittings

All piping, valves and fittings in contact with fat should be iron or steel. Brass, bronze or any metal containing copper should be avoided because of the possibility of dissolved copper hastening the development of rancidity. Rubber also is to be avoided. All flanged joints in piping should be made up with asbestos, neoprene or stainless steel gaskets. Suction hoses for unloading tank cars or trucks or for flexible piping uses must be of neoprene or be neoprene lined.

Rendering departments making edible fats, such as lard, have known for many years that brass, bronze or any material containing copper was to be avoided and that iron or steel was preferable for use in contact with the fat. The reason is that copper or copper alloys have a tendency to dissolve or corrode when in contact with hot fats. Dissolved copper tends to catalyze the reaction between oxygen of the air and unsaturated fats to produce oxidative rancidity. Because the presence of dissolved copper was of little practical importance to other users of inedible fat, little attention has been paid in the past to the metals used in valves and fittings around many of the rendering plants producing inedible fats. Since many of these plants now are producing a feed grade tallow or grease, they are becoming more conscious of the factors affecting stability and, as valves or fittings need replacement, they are using iron or steel in place of brass or bronze.

Frequent Inspection

It has come to our attention that many plants have used brass valves and still produce a fat having high stability. This is altogether possible as long as there is no corrosion of the brass and all metal surfaces in contact with fat are kept scrupulously clean. Copper, brass or bronze fittings exposed to warm fats, air and moisture at the end of a line have a greater tendency to corrode and cause trouble than those in the line where air and atmospheric moisture do not contact the same surfaces that are exposed to warm fat. For this reason, it is good policy to inspect all valves and fittings at frequent intervals and clean all surfaces that appear to have any signs of corrosion. As replacements are made, new equipment should be of iron or steel.

Some plants that use brass valves have produced high grade, stable fats in spite of the presence of these fittings only to have trouble develop at unexpected times. When such trouble with low-stability fat does develop, immediate attention should be given to the lines to see if any such fittings might be the cause of the trouble, and replacements made with iron or steel if there is the slightest sign of wear or corrosion.

Feed plants considering installations for handling fats from storage to mixers might do well to consult with the nearest fat supplier as to layout, pipe sizes, pumps and fittings.

One of the first considerations is to have the piping large enough to handle a free flow of fat and laid out in such a way that it can be cleaned out if necessary. If the lines are long, they should be heated to prevent hardening of fat in the lines. A 1½ or 2 in. pipe will usually be satisfactory from storage to mixing area. Pipe tees will be found useful in place of elbows so that in case of stoppage a plug can be removed and the pipe cleaned out without the necessity for dismantling the whole system. It may also be desirable in large lines to use flanged joints or, in smaller lines, to provide more frequent unions than in general piping practice. The lines can then be taken down with relative ease for servicing.

Plug cocks or gate valves will give satisfactory service. Semi-steel lubricated plug cocks have proved quite satisfactory and may be a little cheaper initially than gate valves. Brass, bronze or copper should be avoided when installing new equipment or replacing the old.

Pumps

Liquid fat is easy to pump, and most types of pumps can be used. On the other hand, cool fat is rather difficult to pump unless the right type of pump is used. Experience has shown that a gear type of pump is probably the most satisfactory. Pumps should be all iron. Here, as in other fittings, brass and bronze should be avoided. Gear pumps should be equipped with pressure relief valves so as to guard against motor overloading in the event they pump against a closed line. If lines are short and fat is always warm, a low pressure rotary pump will be sufficient.

To avoid interruptions during maintenance or pump failure, it is often advisable to have pumps in duplicate.

Mixing Facilities

Methods and equipment to be utilized in adding fat to feeds will be determined by the specific production and mechanical requirements of the individual plant.

Tallows or greases must be heated prior to mixing the feeds. These fats are solid or semi-solid at the usual storage temperatures and must be heated to make them sufficiently liquid to flow through the piping to the mixer and to get a good coating of fat on all feed particles.

In plants where only moderate amounts of fat are used each day it may be convenient to pump the fat from storage to a pre-heating tank in which the temperature is thermostatically controlled at whatever temperature is found most desirable —usually somewhere between 120° and 160° F. Either steam coils or electric heaters may be used. If electric heaters are used, some provision should be made to prevent localized over-heating in any part of the heater not immersed in the fat. Heaters located in the bottom of the tank are safe if provision is made for insuring that the level of fat does not get so low as to expose the heating surface. A fat level indicator or level control device will be found helpful.

Animal fats are flammable and an electric heating element that is not thermostatically controlled may present a fire hazard if over-heating occurs above the fat level in the

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tank. Electric heaters are safe if properly installed.

Stirring Fat

Provision should be made to stir the fat in the pre-heater tank. This applies to the storage tank as well if the storage tank is kept at higher temperatures in lieu of using a pre-heater in front of the feed mixer. Most tallows and greases contain a small percentage of moisture and insoluble matter that, if not kept stirred up, will settle out and eventually accumulate at the bottom. Insoluble matter may have a tendency to sour if allowed to accumulate in the tanks.

Adequate stirring by mechanical stirrer or air agitation will prevent major accumulation of sludge in the tank and obviate the necessity for frequent cleaning of the tank bottom. An air blast into the bottom of the tank at intervals will roll the fat and prevent settling. This air stirring should not be done continuously but rather at such intervals as may be found necessary.

Fat at a temperature of 120° F. usually will be found to mix readily with the feed in the summer months when all feed ingredients are warm. In the winter months, when other feed ingredients are cold, a higher fat temperature may be found necessary to allow a complete coating of all feed particles before the fat cools. Ordinarily, a temperature no higher than 160° F. will be required, although in extremely cold weather 180° or even 200° F. may be required.

This temperature requirement is partially determined by the type of mixer used and the degree of agitation obtained in the mixer. The important consideration is to have the fat warm enough to mix readily and completely with other feed ingredients.

Moving Fats to the Mixer

The heated fat should be conveyed to the mixer by the shortest and most convenient route. If the storage and heating tank can be located above the mixer, the fat may flow by gravity. Various types of pumps are available that can be used to deliver the fat to the feed mixer. Some pumps are the positive type, delivering a definite amount of fat on every revolution of the pump.

Combination equipment is available that will provide a pre-heating tank, pump, and measuring equipment in a single unit for attachment to the feed mixer. Similar combinations also may be obtained that are equipped with several pumps and thus are capable of supplying fat to several mixers simultaneously. No copper, brass or bronze should be used in heating coils or pumps.

Measurement of amount of fat going into the mixer may be made by any means suited to existing equipment. In batch type mixers, any system may be used from the simplest —such as the use of calibrated markings on the side of a tank—to the most elaborate completely automatic systems. In some cases, a meter, such as a water meter, has been found useful for measuring the number of gallons of fat run into the mixer. In other cases, positive action pumps have been used to deliver a definite amount in a given time.

For continuous mixers or automatic operation of batch mixers, flowmeter equipment is available that will control the fat used at any predetermined amount. Flow meters can also be obtained for any desired degree of automatic operation from simple, manually operated to completely automatic units.

Almost any existing type of feed mixer can be used to put fat into feeds. Many mills have already converted horizontal, vertical or continuous mixers to handle fats. Frequently, other equipment may already be on hand for handling other liquids and may be found adaptable to handling fat.

Horizontal mixers may do their best job of mixing fat into the feed if the fat is sprayed into the mixer. Spraying involves installation of a pump capable of delivering the required pressure, but it may be found preferable because of the large surface of feed and comparatively slow action of the stirring ribbons.

Vertical mixers are easily adapted to mixing fats by merely pouring the fat into the loading hopper after most of the other feed ingredients have been loaded. No spray is needed in the vertical mixer. The fat delivery pipe is outside the mixer in full view where rate of delivery can be observed. It may be desirable to attach a short chute to the bagging spout and recirculate the feed through this spout and into the loading hopper as the fat is being run in.

It has been found advisable with some vertical mixers to increase the speed of the elevating screws to insure against formation of feed balls with the fat. Some twin-screw vertical mixers do their best job of mixing dry ingredients at the screw speed originally recommended by the manufacturer, and an increase in screw speed may cause a separation of some feed particles when dry. With the addition of fat, the characteristics

(Continued on page 53a)

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SWANSON MILL

(Continued from page 45a)

Dale Bradford is plant superintendent. He is a graduate of the University of Arkansas school of agriculture and has been with Swanson's since 1950. As nutritionist, Swanson's has another University of Arkansas graduate, William Clower, who holds a master's degree from that institution.

Specialty Mill

In the true sense, this is a specialty mill designed primarily for broiler feed production. The new plant was designed and engineered by Hayes & Stolz of Fort Worth, Texas. The problem facing the designers was to construct a low cost plant with a high degree of operating efficiency, streamlined for broiler feed production and bulk distribution. Thus, many unusual points about this plant are the result of meeting these specifications.

For example, the mill building has a concrete foundation and basement and a steel-clad superstructure built by the Fort Smith (Ark.) Structural Steel Co. In a colder climate a different type of building would be necessary, but the relatively mild Arkansas winters do not require so much protective covering. Again, there are no floors in the building above the ground level, although the building has a uniform height of 65 ft., with the head-house at the elevator end of the building rising another 30 ft. Normally, there would be at least one floor above the ground level to facilitate the flow of packaged products by gravity, but in the Swanson mill so much of the output is moved to customers in bulk that this was unnecessary and a second floor expense was saved by substituting occasional catwalks for a full floor.

Throughout the mill, this same principle of streamlining to basic essentials was followed.

Labor Minimized

As a result of this, and the remote control handling of feeds in bulk through the central mixing point, it is expected that the mill will be able to operate with 12 men, including all supervision, warehouse, loading and unloading activities, but not including any office personnel or truck drivers. Since the plant has a rated capacity of 100 tons per eight hours, this is better than one ton per man hour. It is felt that with heavier broiler type feeds, this ratio even may be improved further with experience in operation.

Grains and other ingredients come

into the plant by rail or truck. From dump pits, conveyor belts and elevators carry these materials to the head house where they are cleaned and distributed to the various storage bins.

Hayes & Stolz manufactured the elevating and materials handling equipment throughout.

The plant has four steel grain tanks, each with a capacity of 8,000 bu., or a total over-all grain storage space of 32,000 bu. There are 12 bulk storage ingredient tanks, each having a capacity of 70,000 lb. For liquid ingredients there are two outside storage tanks, one for molasses and one for fish solubles.

All grains are cleaned before binning. A Hart-Carter Scalperator removes foreign materials and magnetic separators are a further safeguard at this point.

In addition to the storage bins, there are three grinding tanks with a capacity of 90,000 lb. each. Materials from the grinding bins go to a Jacobson hammermill in the basement. The hammermill has a capacity of approximately 5 tons per hour.

Mixing Operations

The mixing operations are carried on at a central control panel on the first floor of the mill. At this panel, an operator has push-button control of the ingredients in each of the mixing bins, and the flow of ingredients from the mixing tanks is regulated by a pneumatic valve system, which opens each ingredient gate to permit the flow of a material to the scale hopper which cuts off the flow when the proper amount has been delivered. Hanna cylinders and Schroeder control valves are used in this set-up.

The ingredients are weighed out on these hopper scales and then are discharged into twin horizontal batch mixers in the basement. These are Hayes & Stolz mixers of 90 cubic feet capacity and are built to load and discharge in six to eight minutes.

The rated capacity of these mixers is 10 to 12 tons per hour, but with heavy high energy broiler feeds, it is expected that as much as twice that production could be attained at a maximum.

Tapes Printed

As part of the quality control system, tapes are printed as the operators at the control board weigh out each ingredient. These tapes record the weight, bin number from which the ingredient is taken, time and date. These records, in turn, are checked against the prescribed formulas so that any mistakes and errors can be corrected before the feed is manufactured and shipped from the plant.

At present, premixes are being handled on the regular mixing system, although provision has been made in the plant for eventual development of a special premix section. Because the Swanson output is so highly concentrated in one kind of feed, it is possible to run a two-week supply of premixes as part of the regular production routine.

When the feed is mixed it is elevated to the top of the plant and goes through a Richmond Gyrowhip finisher and dresser before being distributed to the shipping bins for finished feeds. Feed to be pelleted goes to a pellet mill bin ahead of a Century 50 California Pellet Mill and a California scalper and cooler.

Handling Fish Solubles

Another unusual phase of production is the system used for handling fish solubles, which are put on the finished feed and not on a carrier. After all the other ingredients have been mixed, but before they go through the Richmond dresser, the feed goes through a Hayes & Stolz blender where the fish solubles are mixed on the stream. Any lumps that result are eliminated by the dresser and are sent through a 5 h.p. hammermill for processing and grinding and then brought back to the finished feed stream. The solubles are stored in an outside tank with the customary heating coils and agitators and pumped to the blender through a Strong-Scott metering regulator.

The new Swanson plant is equipped to ship both in sacks and in bulk. From the shipping bins, feed is spouted to the bulk truck loading dock where the trucks are weighed on a Webb City 45-foot 50-ton capacity truck scale.

Feeds destined for sacks, move to Richardson semi-automatic, gross weight bagging scales which pack 50 to 100 lb. bags. Capacity is 500 maximum bags per hour. A Union Special sewing machine completes the packaging job. Here again, such a small portion of the Swanson output is sacked that packaging needs are served adequately by a semi-automatic rather than fully automatic packing equipment.

With railroad docks on one side of the plant and truck docks on the other, shipments can be handled conveniently either way. However, with the type of concentrated broiler operation which this mill will serve, the vast percentage of its shipments will be made by truck.

At the present time about 70% of the feeds distributed by Swanson's goes to their growers in bulk. It is expected that this figure may run as high as 90% when the new mill has been in operation for a while. Swanson's now operate four bulk delivery trucks — three Baughman and one Wenger.

At the present time the company's production is almost entirely in poultry feeds, with only a small amount of dairy feed produced primarily as a service for farmer customers.

However, Mr. Hale is taking a great interest in the experimental work that has been done to show the value and methods of using poultry litter as a source of non-protein nitrogen in cattle feeds. He is enthusiastic about the prospects for this new feed ingredient, as the result of experimental work conducted at the University of Arkansas where good gains were made by steers on a balanced ration containing 10% poultry litter and a very substantial saving in feed cost achieved over a standard ration utilizing cottonseed meal as the principal protein source.

For that reason Mr. Hale looks forward to the time when the new mill will also be producing range cattle cubes utilizing the abundant poultry litter of the northwestern Arkansas area. With about 1 million chicks Swanson will have a good deal of litter available to them. They have been buying the litter from their poultry raisers in baled form at a price of approximately 50¢ a bale. With an average yield of about 2 tons of litter per thousand chickens, Mr. Hale can see an ample supply available.

Such a development of a large scale cattle feed or dairy feed business would naturally bring about corresponding changes in the set-up of the company's milling plant.

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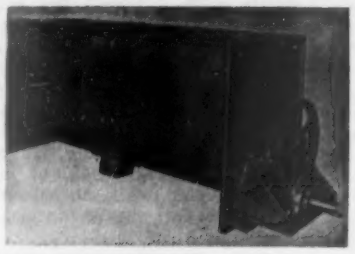

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AND
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FOR
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KENT FEEDS EXPANSION—An approximate 25% increase in plant capacity has been announced by O. W. Joiner, general manager of Kent Feeds, Muscatine, Iowa. Projects being carried out to provide this increased capacity include: (1) Construction of a new warehouse capable of storing some 1,000 tons of ingredients and feed; (2) use of a new type all steel pallet and fork lift trucks in the warehouse to provide maximum storage utilization and increase capacity of the present warehouse by about 45%; addition to the pelleting line of a new 100 h.p. mill and cooler and granulator. These moves will increase the daily capacity to about 600 tons a day. Cost of the expansion moves will exceed $50,000. The present Kent plant was completed in 1952. Increased feed business in midwestern states has necessitated the capacity increase, Mr. Joiner pointed out. In the above picture, C. E. Swick (left), superintendent of the mill, is looking over the new method of warehousing Kent Feeds.

MAIN STREAM FEEDERS
A wide selection of high-accuracy feeders for main feed ingredients. Anyway you wish to do it — by weight or volume, batch or continuous.

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For feeding vitamins, medicants, anti-oxidants, or prepared premixes — at highly accurate rates to insure uniform potency from first to last bite in every ton. No wasteful over-fortification.

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Omega offers "packaged" systems for compounding micro-ingredients to formula. Accurate, compact, flexible, these systems permit feed manufacturer to supply constantly uniform mixes.

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Omega offers you a broad line of continuous weighing-type and volumetric feeders — for main feed ingredients, for micro-ingredients, for compounding of pre-mixes. Our industry-trained engineers will be glad to work with you on your feed compounding problems. Write for Bulletin BIF 3 describing the complete line of Omega Feeders — or ask for data and recommendations. Omega Machine Co., 531 Harris Ave., Providence 1, Rhode Island.

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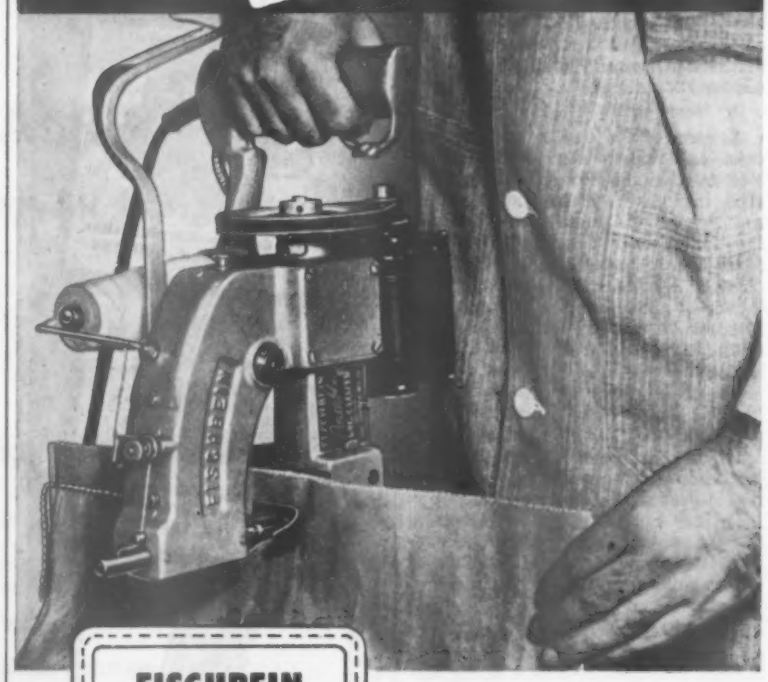

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SWIFT MILL

(Continued from page 15a)

scale; the intake sink on the elevator carrying ground grain to the reel; and direct pickups from the molasses scale hopper and the pellets and mash feeds scale hopper.

Whole grain bins are subject to a lot of dust because of loading methods of bulk cars and because of the inspection openings in the bins themselves. The need for optimum safety in the mill makes an efficient dust removal system very important.

This mill is close to its chemical laboratory. Swift & Co.'s chemical laboratory, located in its North Portland meat packing plant, aids materially in maintaining quality in the product being manufactured at this mill. Ingredients purchased on specifications are inspected and analyzed by the laboratory. The control program also includes continuous sampling, inspection and analysis of the finished product.

As I mentioned in my opening paragraph, this mill is not completed. In the near future we will be adding a mineral supplement mixer, a bulk loading system and a steam rolling unit.

These additional improvements will definitely make this one of the most efficient and versatile country-type mills in the U.S.

Feed Plant Accident Causes

The most frequent cause of accidents in feed mills is carelessness, according to a survey made by the Midwest Feed Manufacturers Assn., Kansas City. Association members were surveyed on the mill accident problem in connection with a safety session to be presented at the Midwest Feed Production School in Kansas City Nov. 15-17.

In answer to the question of what causes the most frequent injury in their feed plants, by far most of the employers said "carelessness." Running second were improper lifting, loading and pulling. Other causes of accidents which were mentioned frequently included falls, unguarded machinery and noncompliance with safety regulations.

The most costly accidents, according to the feed men, are those resulting in back injuries. Next are ruptures, broken bones and sprains, in that order.

Most motor vehicle accidents are minor ones, the survey showed, and there is little in the way of public hazards in the operation of a feed mill.

Weighing Formula Feed Accurately

The subject of weighing and scales was part of an extensive review of feed packaging published by the U.S. Department of Agriculture. The author of the report, based on a study of 50 feed mills, was Lacey F. Rickey, agricultural economist with the Farmers Cooperative Service of USDA.

Regarding accurate weight, the author said that with non-automatic scales the feed miller must strike a balance between the cost of a few extra ounces of feed and the labor cost of taking time to make each bag weigh accurately. Many of the older automatic scales will fill bags with only a small tolerance if operated slowly, he said, but will vary considerably if speeded up. Also, he said, it is harder to get close weights on a bulky dairy feed than on a heavy mash.

"There has been a great deal of engineering thought given to automatic scales in the last few years and most of the new models can be depended upon to operate both accurately and rapidly," the report continues. "With reasonably careful operation they will consistently weigh with a tolerance of plus or minus 2 oz.

"In filling 100-lb. bags with this average overage of 2 oz., the feed manufacturer loses 2½ lb. of feed a ton. At $100 a ton, or 5¢ lb., this amounts to 12½¢ ton. With fairly accurate scales, we will have to have a tolerance of plus or minus 4 oz. and this cost becomes 25¢ a ton. Probably on the majority of scales in use in feed mills, a tolerance of 8 oz. is necessary and bags of feed will leave packers weighing anywhere between 100 and 101 lb. This overage will cost 50¢ a ton, or 37½¢ a ton more than if the latest type scales were in use.

"When packing in 50-lb. bags, accurate weights become just twice as important. The new scales are expensive, but a mill operator can sample check his actual weights and figure how much he can afford to invest to obtain more accurate weights." Speed and labor costs, of course, are another factor.

FEED MILL LABORATORY

(Continued from page 16a)

fore shipment is made, in most cases. They are the basis of real quality control, the "bread and butter" work

"Pattern" type testing involves assays that cannot be completed quickly enough or performed often enough to serve as acceptance or rejection factors, but which are used to get a picture of the normal behavior pattern of numerous factors in the production operations. In addition to the tests used for policing, such factors as fat, fiber, ash, calcium, phosphorus, manganese, sodium chloride, carotene and vitamin A, riboflavin, when run repeatedly enough, establish a statistical basis for determining proper quality control. Adequate and safe of the laboratory.
but not excessive overages for critical materials, proper mixing times, sufficient "set back" between feed changes and other factors affecting the uniformity of products, are typical of the problems "pattern" checking helps solve. In fact this "X-ray" picture of plant operations is limited only by the chemist's ingenuity and the cooperativeness of production management. Another important "pattern" study concerns storage and stability of products. The history of moisture changes, from mixing through prolonged storage under different conditions, and carotene retention under the same conditions furnishes important data.

In addition to police and pattern tests, the laboratory performs a variety of services of a more long term and investigational nature, which varies greatly in scope among different companies, depending upon how much testing and "research" is being done.

An important, but often misunderstood fact is that fundamentally the analytical laboratory in the feed industry is not a research laboratory,

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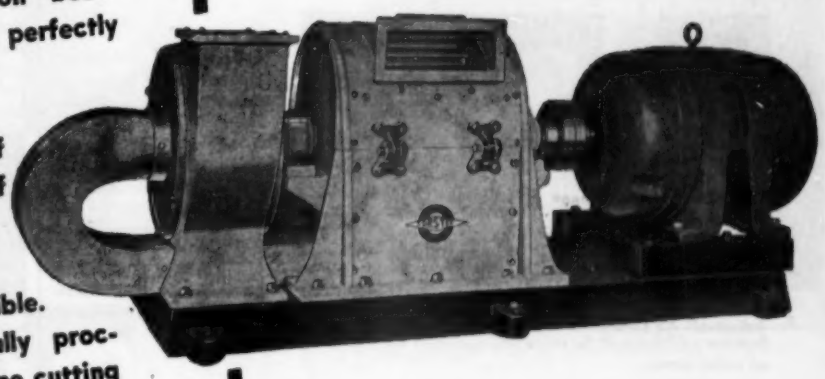

MACHINES FOR MODERN MILLING

signs on most lab doors, notwithstanding. What is termed research in the feed industry—which is largely testing rather than true fundamental research—is primarily biological, involving comparative feeding studies of one sort or another. In such procedures, the laboratory is a tool, as in the case of purchasing or production, but only a tool.

If a study is made, for example, of the effect of phosphorus levels in growing chicks, it is necessary that the laboratory assay the feeds to be sure that the levels are actually as intended, and the laboratory might run chick bone ash tests at the end of the experiment, but the problem under investigation is fundamentally nutritional, not analytical.

It must also be understood that the laboratory is not necessarily, or even usually, the nutrition, formulation and "research" department. Most feed nutritionists have come into the industry with degrees of an animal husbandry background, such as poultry science or dairy science, to which chemistry is incidental. The number of nutritionists with primarily chemistry or biochemistry backgrounds, with "animal" training incidental, are fewer. Where the laboratory and nutrition departments are separate, as they are in large companies and even most smaller ones, management quite frankly may be faced with a personnel problem. The scientific responsibilities — and authority and prestige—must be clearly defined, because complete cooperation is essential. If laboratory findings are to be translated into money saving action, perfect coordination between chemist and formulator is essential.

Companies interested in potential laboratory installations are keenly interested in costs. The minimum cost of a laboratory capable of making most, if not all, of the tests mentioned here, will be about $5,000, with housing and installation extra. Recently the Association of Scientific Instruments Makers, at the request of the National Candy Manufacturers Assn., made an estimate for the equipment for a minimum quality control laboratory for that industry and arrived at the same figure.

This laboratory will be adequate for the smaller mill—15,000 to 50,000 annual tonnage, while the medium class—50,000 to 150,000 annual tonnage, will usually need about $8,000 to $15,000 in equipment. It is a common failing of management inexperienced in laboratory problems to under-equip, or rather to over-estimate the capacity of laboratory equipment. Even with the cost of scientific equipment being high in comparison with regular equipment, it is cheap in comparison with laboratory labor costs. A two-unit fat apparatus, for instance is a nuisance, even in the smallest laboratories. Probably three fourths of the laboratories with 6-unit Kjeldahl protein outfits really need 12 units, and most of those with 12 would profit by 24-unit setups. The speed and flexibility of adequate equipment soon pays for itself.

How far the feed mill should go beyond the program outlined here would better be determined by evolution from such a starting point. In general, the maxim, "Run nothing that cannot result in action" should be observed. Such procedures as microbiological assays, vitamin D chick tests, amino acid paper chromatography have a place in the larger organizations, particularly the multiple unit companies with central laboratories, but unless the volume of purchases of such things as vitamin D oil or vitamin B_{12} involves great quantities, the many reliable commercial laboratories will be more economical, for the volume of such tests that the average mill will need.

It is difficult more than to generalize in estimating salary costs for feed laboratories. As a rough guide, however, a survey conducted annually by the American Chemical Society shows that last year, graduating chemists with bachelor's degrees and without experience were going into industry at an average of $350 per month. Enough experience to warrant assuming charge of a laboratory would suggest a minimum of at least $400; larger laboratories would imply larger salaries, but capable technicians can be trained for routine operations, lowering the per sample average cost.

One of the common mistakes feed companies starting laboratories make is an improper sampling set-up. Sampling is a critical factor, and the source of many errors. It should be independent of production and under the control of the laboratory, but usually the sampler is selected because a broom can be left with less trouble than a panel board or desk, or because the one selected is a good man with a car door. The American Association of Cereal Chemists Feed and Feedstuffs Evaluation committee is carrying on a study of sampling techniques, and its findings should be a guide to industry practice.

Justifying Expenditures

How does the laboratory justify these expenditures? If all the savings of laboratory control showed up on the company books as specifically as telephone bills or insurance payments, a great many laboratories would be inaugurated about as rapidly as the personnel could be found.

On the subject of direct savings on ingredient costs, estimates must be made with cautious reservations, since conditions vary so greatly, but for an average mill, with average safety-factor formulation and employing as a guide one of the current popular feed ingredient analysis charts, a saving of from $1 to $2 per ton is possible on protein alone. Savings on vitamins through "pattern" tests, savings on mixing time or other production factors represent savings of varying degrees of tangibility.

Irrespective of direct financial returns from quality control, however, there is a necessity for uniform and efficient production of formula feeds. A large and growing proportion of the buyers of feed today are aware of the efficiency of our products to the second decimal. For this type of customer there can be no guess work for long. Control at every step of the way is essential to retain the business of this growing class of feed customers.

How Small a Mill?

The answer to the question of how small a mill can afford a laboratory, depends upon many factors—but consider that a mill making just 60 tons per day is buying annually about $1 million worth of complex and varied raw materials, differing widely in price, and selling them for a relatively small margin over the raw material price. It can ill afford to gamble either on the quality of its purchases or the accuracy of its blending.

The relatively free and easy days for the rapidly expanding feed manufacturing industry are disappearing. Bulk handling, pallets and fork trucks, paper bags—all point to the race for cost saving and efficiency. The days when margins could be maintained to cover a multitude of sins of production inefficiencies, extravagant promotion costs and careless ingredient buying, and still show a profit, are drawing to a close. Only the efficient can remain in the race, and no one selling nutrition can afford to guess about it.

One of the brightest prospects for the future of the feed industry is the fact that its Feed Technology School will soon be making available to the industry men capab'e of operating the laboratories against a background of thorough training in feed technology.

A virtual bottleneck of the lack of feed-wise chemists will be broken, just as the Milling Industry School, of which it is a part, has done for the flour milling industry during the past quarter century. The benefits to the entire feed industry will be incalculable.

COSBY-HODGES

(Continued from page 10a)

FT sacking scale. The smaller packages of scratch feed are packed on an Etbauer Duplex net weigher. For packing dry mash feed, the following scales are used: One 50 and 100-lb. combination Duplex Richardson Model GG38 scale. For 25-lb. sacks two Model E50 Duplex Richardson scales are used, and in addition two Etbauer Duplex net weighers are used for packing 10-lb. units. For packing pellets and crumbles, a Richardson Model OFFFT scale is used, and in addition an Etbauer Duplex net weigher is used for packaging the smaller units.

After feeds have been packed they drop through an opening in the floor onto conveyor belts which collect the various sizes and items and carry them to a sorting table located in the center of the warehouse. At this table all feeds are separated according to size and type. They are then placed on pallets, picked up by fork-lift trucks and carried into the warehouse, railroad cars, or to the truck-loading area. In the palleting operation, the take-it or leave-it system is used. Thus the unit load may be picked up without pallet and carried to the car or the entire load with the pallet picked up and carried to the warehouse. Four Hyster fork lift trucks are used in this operation.

At the car-loading dock, two rows of five cars each can be spotted at one time. The plant operates with a minimum dust problem as an extensive dust system was installed by The Day Co.

The plant was designed by Paul Berg, consulting engineer, Ft. Wayne, Ind., and built by Sullivan, Long & Hagerty Construction Co. of Birmingham. In charge of construction was J. W. Sloan, vice president and plant manager for Cosby-Hodges.

CLOSED-THROAT models can be furnished in 20" diameter (for granular grinding of free-flowing materials) and in 24" diameter (for pulverizing free-flowing fibrous materials).

The photos above show four possible positions in which the motor, mill feed inlet, and fan discharge outlet can be installed on models having separately-driven fan. Assemblies as shown in photo B and D are available on models with shaft-mounted fan.

OPEN-THROAT models, having 24" diameter, are available for a wide range of grinding operations—whether material is bulky, free-flowing, friable or fibrous.

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Compare advantages offered by Dixie Mills: Full-length foundation • All-steel construction • Low inlet hopper for better feeder line pitch • Perfect shaft and bearing alignment • Rotor discs and spacers machined and individually balanced • "No-leak" fan housing with replaceable abrasion-resistant steel liners • Easy replacement of hammers and screen.

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3. Adjustable Air Control varies suction through the screen—furnishes additional air for conveying—prevents material build-up under screen.

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D-M-C

FATS IN FEEDS

(Continued from page 48a)

of the feed are changed sufficiently that a better mixing job may be done with a somewhat higher screw speed. A jack-leg attached to the side of the mixer will provide means for changing pulleys and screw speeds.

It is possible that an increase in screw speed may also necessitate a slight increase in power, particularly for mixing concentrate feeds that have a high density. If present motors on vertical mixers appear to be slightly under-powered after increasing screw speeds, an additional 2½ or 5 horse power on the motor should prevent difficulty and result in lower maintenance costs.

A continuous mixing operation presents the greatest opportunity for completely automatic application of fats. Flow meters can be installed to measure the amount of fat going in and to control the percentage along with the control of other materials. The fat should be run into the mixer at a point after most other ingredients have been run in. A high speed dresser at the end will insure freedom from balls and give the mixed feed a uniform appearance.

Since fats are added after most other feed ingredients in the mixer, a slightly longer mixing time will be required. The mixing time can best be judged by the operator for each type of feed and rate of fat addition. Some vertical twin-screw type mixers may require about 5 minutes longer total mixing time than was needed without fat additions. Horizontal mixers may require some additional time also. Continuous production equipment probably can be operated at the same rate as previously.

Specialized Equipment

There are a number of manufacturers of specialized equipment designed for application of liquid materials to feeds. This equipment can be used as is or readily can be adapted to mixing fat into feeds. A portable unit is available that can be wheeled up to the mixer so that the discharge from a vertical or horizontal mixer empties into the fat mixer. From this fat mixer the feed may be run back into the feed mixer, to storage or to the bagger.

Other more elaborate pieces of equipment are designed to heat the fat, measure the amount delivered to the mixing chamber, and deliver the completely mixed feeds at the end. Heating, pumping and measuring units are available which may be attached to one or a number of mixing units or they can also deliver fat to pelleting machines. All heating coils, pumps, and metering devices as far as possible should be made of metals that do not contain copper.

Pelleting with Fat

Pelleting feeds containing added fat sometimes require a change in technique. Feeds can be pelleted with fat added at levels up to about 5%. Above this level, there may be some difficulty getting the pellets hard enough to withstand handling. Even up to the 5% level, difficulty may be experienced in some cases.

However, plants are making a very satisfactory pellet with fat added at levels up to 5 per cent and reports have been received of pelleting capacity being increased as much as 20% when fat was added because the fat provided sufficient lubrication to allow a more rapid passage through the dies.

If difficulty is experienced in obtaining a good pellet, an increase of about ¼ in. in die thickness has been reported to solve the problem. Starter feeds containing a high proportion of dried milk products customarily are difficult to pellet, and fat will be of value in this type of feed since ease and speed of pelleting will be facilitated by the added tallow or grease.

Safety Stunt

A safety stunt called "The Mystery Man" has been used by many plants of the Ralston Purina Co. Each week during a month's period one employee on each shift was secretly selected by the superintendent. At some time during the week this mystery man would commit one or more unsafe acts in the presence of other workers. (These acts were carefully planned so as not to expose the man to possible injury.) Any employee who detected the unsafe act and called it to the mystery man's attention, immediately recovered five silver dollars. Everyone soon was watching everyone else for unsafe acts.

FIRM INCORPORATED

ESTHERVILLE, IOWA—The Golden Sun Milling Co. of Estherville recently filed articles of incorporation. The firm will do a feed mill business. Officers are Herman A. Jensen, president and secretary, and Lawrence M. Jensen, vice president and treasurer, both of Estherville.

NEW AND REMODELED MILLS

(Continued from page 5a)

Ozier Feed Mill, Bowden, Ga.
*Pay Way Feed Mills, Inc., Kansas City, Mo.
E. M. Peet Mfg. Co., Frankfort, Ind.
*Pillsbury Mills, Inc., Clinton, Iowa.
*Quaker Oats Co., Memphis, Tenn.
Ralston Purina Co., Wilson, N.C.
Ralston Purina Co., Gainesville, Ga.
Ralston Purina Co., Delmar, Del.
Ralston Purina Co., Harrisburg, Pa.
Ralston Purina Co., Shreveport, La.
Ralston Purina Co., Spokane, Wash.
Red River Feed Mill, Heber Springs, Ark.
Roy Ritter Feed Mill, Springdale, Ark.
*Schreiber Mills, St. Joseph, Mo.
Scott County Milling, Sikeston, Mo.
F. M. Stamper Co., Moberly, Mo.
Southern Co-op & Cotton Producers Assn., Henderson, Ky.
Southern States Cooperative, Inc., Seaford, Del.
Specialty Foods & Feed Exchange Co., Monroe, Wis.
Staley Milling Co., Kansas City.
Stemmer Feed Mill, Shakopee, Minn.
A. E. Staley Manufacturing Co., Decatur, Ill.
C. A. Swanson & Sons Hatchery, Fayetteville, Ark.
Swift & Co., North Portland, Ore.
*Texas Farm Products Co., Nacogdoches, Texas.
Wm. B. Truitt & Sons, Bridgeville, Del.
*Universal Mills, Ft. Worth, Texas.
Valley Mills, Vicksburg, Miss.
Henry Viktorin, East Bernard, Texas.
*Vitality Mills, Inc., Chicago, Ill.
*Vitality Mills, Inc., Monmouth, Ill.
Walnut Creek Milling Co., Great Bend, Kansas.
Wampler-Bryan Co., Harrisonburg, Va.
Weiser Mill, Lampasas, Texas.
Whinrey Mills, Caplinger Mills, Mo.

1. APEX BAGGING SCALE
2. ALUMINUM BAG CONVEYOR
3. UNIVERSAL MOISTURE TESTER
4. ELEVATOR LEGS
5. PORTABLE ELEVATOR
6. Grain Bins
7. AUGER ELEVATOR
8. WHIRLAWAY CAR LOADER
9. Eze-Move Bulk Scale
10. Grain Spouting
11. Cob Crushers
12. GRAIN PROBE
13. Bolted Grain Tanks
14. Drag Feeder
15. ELECTRIC TRUCK HOIST
16. INDUSTRIAL VACUUM CLEANER
17. Magnet
18. Elevator Cups
19. Corn Shellers
20. Belting
21. Dust Collectors
22. Sewing Machines
23. WT. PER BU. TESTER
24. BOERNER SAMPLER
25. VERTICAL FEED MIXER
26. GRAIN SIEVES
27. Minneapolis Bag. Truck
28. HAMMERMILL
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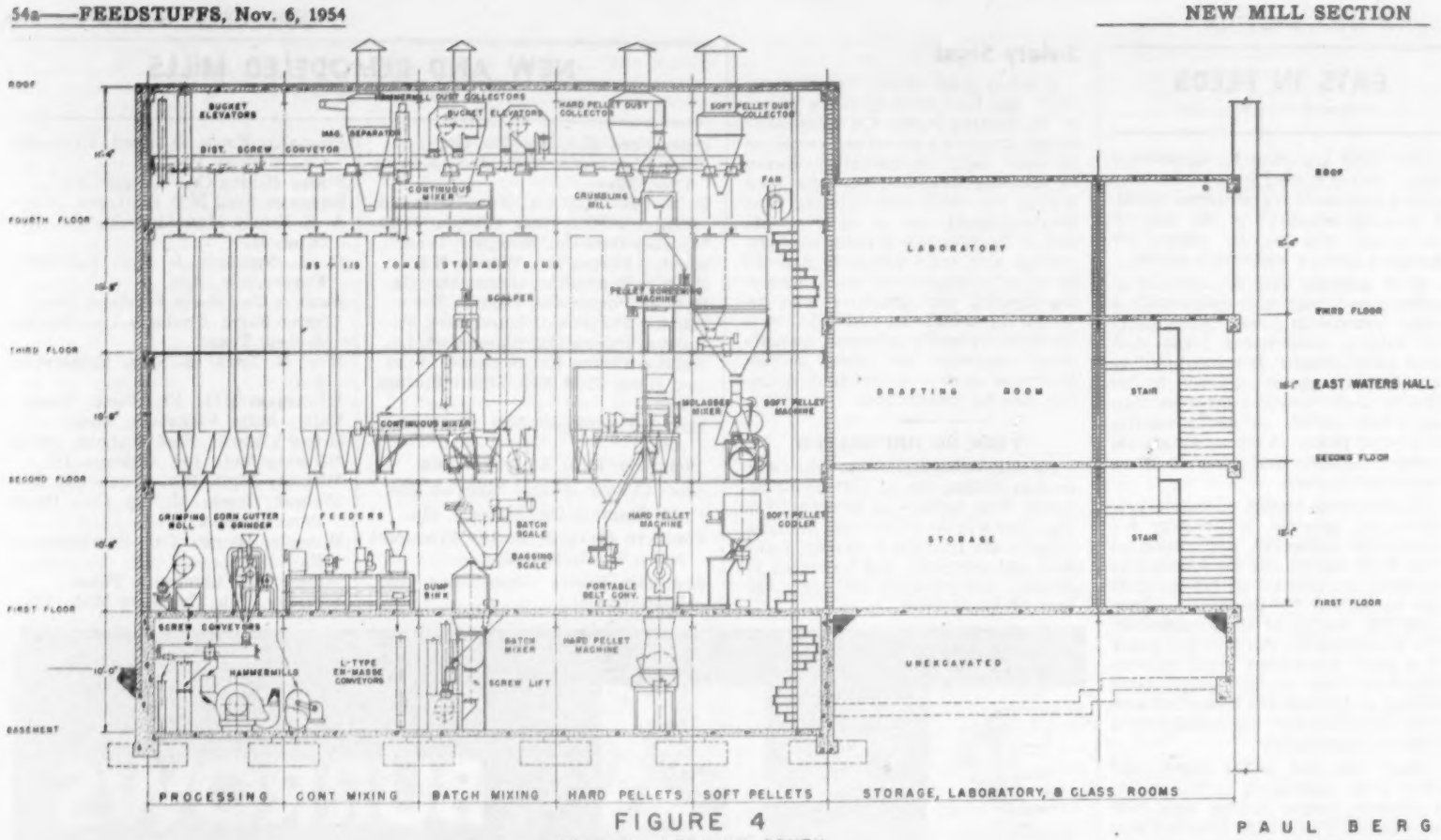

FIGURE 4
SECTION LOOKING SOUTH
FEED TECHNOLOGY PROGRAM
KANSAS STATE COLLEGE

PAUL BERG
FEED MILLING ENGINEER
FORT WAYNE, INDIANA

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COLLEGE PROGRAM

(Continued from page 1a)

The continuous mixing line has eight 1.15-ton bins supplying eight feeders. Two of these feeders are the gravimetric type, six are volumetric type, with one of these a screw type, one a vane type, one a wing type, one a mechanical vibrating type, one an electric vibrating type and one a disc type. All these feeders are located on the first floor excepting one is in the basement that can be reached from a floor hopper. After the material is proportioned in these feeders, it is elevated to the top where it is magnetically cleaned and passed through a continuous mixer. Following the continuous mixer, the material is passed over a feed dresser which discharges into a surge bin over the bagging scale, or bypasses around the surge bin to a second continuous mixer which discharges into the same bagging scale. The continuous mixers will blend the feed and also mix in liquids. Under the bagging scale is a floor hopper for catching any dribble or missed bags, and the feed is re-elevated to the bagging scale by a screw type elevator.

The eight bins over the batch mixing equipment contain 1.15 tons each. Three of these bins discharge by air-cylinder-controlled gates, four discharge by screw conveyor feeders, and one discharges by a hand-controlled gate—all into a 500-lb. capacity hopper with a printing-type dial scale. The four feeder conveyors are push-button controlled and the three air-operated slide gates are air-valve controlled. The hopper scale discharges into a 500-lb. capacity horizontal-type batch mixer by an air-operated slide gate, and into the same batch mixer a floor sink is provided for hand-dumping directly. The batch mixer bucket elevator discharges into a spout-type magnetic separator and thus into the same feed dresser that is on the continuous system. After the feed leaves this feed dresser, it can be by-passed to a separate bucket elevator which elevates the material into the conveyor that feeds the bins over the hard and soft pelleting equipment.

Pelleting

The hard pelleting equipment has two bins of 1.15 tons capacity each, one of which feeds the pellet mill directly and the second of which feeds a molasses mixer ahead of the pellet machine. This molasses mixer discharges into either the pellet machine or into a twin bagging spout on the first floor. After the pellets are made, they are cooled in the basement by a gravity type cooler and re-elevated to a crumblizer and a screening machine, from which the pellets accumulate in a bin over a bagging scale. The fines and over-size materials are returned either for re-crumbling or for re-pelleting.

The feeds for the soft pellet machine go into a 1.15-ton bin with an adjoining bin containing the cottonseed meal. The cottonseed meal bin is equipped with a feeder that discharges into the dusting equipment after the soft pellets are made, and the duster in turn discharges into a cooler followed by a bagging scale on the first floor.

After all bags are sewed, they are elevated onto a table from which they are palletized. A lift truck handles the pallets to the floor for stocking or to trucks.

In the basement is a 4,000-gal. molasses storage tank which is filled by truck from the north side of the building. The molasses can be pumped by two systems. One pump is used for transfer to mixing units that have their own system for heating and pumping the liquid to the mixing equipment. The second pump has a variable speed control and controller with heat exchanger for handling the liquid to equipment that has no self-contained pumping unit. There is also a provision for handling from drums other liquids than molasses.

To further describe the equipment arrangement, refer to Figures 3 and 4, which are cross-sections taken through the building facing the two legs of the "L" mentioned previously. The view shown in Figure 3 is a section showing truck receiving and shows the weighing, cleaning, storage and processing area. On Figure 4, the other leg of the "L" is shown, starting with the processing area at the left side, followed by the continuous mixing area, batch mixing area, hard pellets area, and finally the soft pellets area at the right end, with the class room areas to the extreme right.

The electric power is supplied at 440 volts for the equipment excepting some of the fractional horsepower motors which are 110 volts. The steam and air come from service lines in adjacent building. Dust collection equipment is being supplied in three systems, one for the receiving, one for the continuous mixing, and one for the batch mixing.

Specifications, based upon manufacturer's information, have been prepared on each piece of equipment. These are being mounted in a booklet which will be available to anyone interested in knowing more about the equipment that is being used. Although the mill is laboratory size, all the essential equipment has been incorporated for feed mixing at low cost.

You have now taken an imaginary trip through the new building that will house the Feed Technology Program. Watch for the formal opening date. You will be welcome to visit Kansas State College and see your "Feed Industry on the Campus."

Industry Committees Head Efforts in Establishment of Technology School

Much of the credit for the feed industry work in helping to establish a feed technology program at Kansas State College goes to members of the Feed Technology School Advisory Committee, made up of representatives of the feed manufacturing industry.

The committee and its sub-committees have been active in helping and advising the college, and they have led the campaigns for contributions of money and equipment for the construction and equipping of the feed technology building and pilot feed mill.

Committee Members

Members of the advisory committee are:

J. D. Sykes, Ralston Purina Co., St. Louis, chairman.

Maurice Johnson, Staley Milling Co., Kansas City, past chairman.

Wiley Akins, Peter Hand Foundation, Chicago; Ray Ammon, Vitality Mills, Chicago; Dr. H. E. Bechtel, General Mills, Inc., Larro Research Farm, Detroit; E. J. Cashman, Doughboy Industries, Inc., New Richmond, Wis.; Troy V. Cox, Albers Milling Co., Los Angeles; John D'Arcy, Quaker Oats Co., Chicago; W. L. Drake, Humboldt (Kansas) Elevator Mills.

B. D. Eddie, Superior Feed Mills, Oklahoma City; Clyde H. Hendrix, Pillsbury Mills, Inc., Clinton, Iowa; Dolph Hill, Golden Eagle Milling Co., Petaluma, Cal.; E. H. Kieser, Kasco Mills, Toledo, Ohio; C. G. Lindsey, Jr., Lindsey-Robinson & Co., Roanoke, Va.; Wayne Longmire, Security Mills, Inc., Knoxville, Tenn.; Robert F. McLeod, Chas. M. Cox Co., Boston.

W. D. McMillan, Cooperative GLF

(Continued on page 57a)

Contributions of Equipment and Services

Following is a list of equipment and service items contributed to the new feed mill for the Feed Technology Program at Kansas State College, as compiled by the industry technical advisory committee:

Allis-Chalmers Mfg. Co., Milwaukee, motor; Louis Allis Co., Milwaukee, motor; American Pulley Co., Philadelphia, motor base; Arkansas Pallet Corp., Pine Bluff, Ark., pallets; Armstrong Machine Works, Three Rivers, Mich., trap.

Barnard & Leas Mfg. Co., Cedar Rapids, Iowa, roller mill; C. O. Bartlett & Snow Co., Cleveland, Ohio, corn sheller; Bauer Bros. Co., Springfield, Ohio, magnetic dump grate; Paul O. Berg, Fort Wayne, Ind., engineering; Bin-Dicator Co., Detroit, bin level indicator; Black, Sivalls & Bryson, Kansas City, steel bins; Buffalo (N.Y.) Meter Co., meter; L. Burmeister Co., Milwaukee, receiving bucket elevator; Burrows Equipment Co., Evanston, Ill., moisture tester;

Butler Mfg. Co., Kansas City, storage bins.

California Pellet Mill Co., San Francisco, pellet mill, pellet cooler, belt conveyor, crumblizer; Clark Equipment Co., Battle Creek, Mich., lift truck; Columbian Steel Tank Co., Kansas City, steel bins; Combs & Co., Kansas City, belt conveyor; Continental Gin Co., South Birmingham, Ala., recl. conveyor, screw conveyors; Convair, Inc., Pittsburgh, bin level indicator; Corn States Metal Fabricators, Inc., Des Moines, scale hopper; Cosby-Hodges Milling Co., Birmingham, Ala., dump sink hoods.

Day Co., Minneapolis, feed mixing dust system; Dings Magnetic Separator Co., Milwaukee, spout magnet; Dodge Mfg. Corp., Mishawaka, Ind., motor base, V-belt drive arr.; Duplex Mill & Mfg. Co., Springfield, Ohio, corn cutter and grader.

J. B. Ehrsam & Sons Mfg. Co., Enterprise, Kansas, steel hopper, cover and grating, screw conveyor, surge pin hopper, stands for feeders, holding bin, floor hopper and support; Eriez Mfg. Co., Erie, Pa., permanent magnetic pulley, magnetic grating, magnetic separator; Essmueller Co., St. Louis, rack and pinion hand slides, transfer bucket elevator; Exact Weight Scale Co., Columbus, Ohio, sacking valve bagging scale.

Falk Corp., Milwaukee, torque arm reducer; Fairbanks, Morse & Co., Chicago, hopper scale printomatic weigher, motors; Dave Fischbein Co., Minneapolis, sewing machine; Fort Worth Steel & Machinery Co., Ft. Worth, screw conveyor, rack and pinion hand slides; Foster Pump Co., Inc., Brooklyn, N.Y., liquid pump; Fulton-Sylphon Co., Knoxville, Tenn., temperature controller.

General Electric Co., Schenectady, N.Y., motor, battery charger; General Mill Equipment Co., Kansas City, continuous mixer; Godshalk Sheet Metal Fabricators, Bangor, Pa., bucket elevator; Graham Transmission, Inc., Menomonee Falls, Wis., variable speed transmission; B. F. Gump Co., Chicago, percentage feeder, screening machine.

Hanna Engineering Co., Chicago, air cylinders; Hart-Carter Co., Minneapolis, scalpertaor; Hays Corp., Michigan City, Ind., molasses feed controller; S. Howes Co., Inc., Silver Creek, N.Y., grain cleaner, duplex molasses mixer, bagging scale; Huss & Schlieper, Decatur, Ill., floor dump hopper.

Industrial Machinery Co., Ft. Worth, screw conveyor.

Jacobson Machine Works, Minneapolis, hammermill; Brown F. Jenkins, Kansas City, engineering; Jones-Hettelsater Construction Co., Kansas City, installation.

O. C. Keckley Co., Chicago, strainers; Kirk & Blum Mfg. Co., Cincinnati, dust collection.

Link-Belt Co., St. Louis, L-type elevator; Longhorn Engineering Co., Ft. Worth, rack and pinion hand slides, transfer bucket elevator.

Manning, Maxwell & Moore, Inc., Chicago, gauges; Materials Handling Equipment Co., Chicago, screw conveyors; O. D. Milligan Construction Co., Manhattan, Kansas, drayage; Munson Mill Machinery Co., Utica, N.Y., corn cutter.

National Molasses Co., Oreland, Pa., molasses tank; National Tank & Boiler Co., St. Louis, molasses heater; C. A. Norgren Co., lubro-control units; Nutting Truck & Caster Co., Faribault, Minn., bag trucks.

O'Brien Equipment Co., St. Louis, temperature regulator; Oliver Corp., belt conveyor; Omega Machine Co., Providence, R.I., feeder, gravimetric feeder.

Perkins Lumber Co., St. Louis, wood pallets; Prater Pulverizer Co., Chicago, hammermill, percentage feeder, vertical mixer; Puritan Mfg. Co., Omaha, blender.

Ralston Purina Co., St. Louis, vibrating feeder; Reeves Pulley Co., Columbus, Ind., feeder drive; Richardson Scale Co., Chicago, automatic grain scale, vibrating feeder, bagging scale.

Safety Car Heating & Lighting Co., New Haven, Conn., mixer-Entoleter; Sauder's Feed Service, Tremont, Ill., labor; W. J. Savage Co., Knoxville, Tenn., feeder; C. L. Schust Co., Inc., Fort Wayne, Ind., lever for slide gate; Screw Conveyor Corp., Hammond, Ind., screw conveyor, bucket elevator, portable screw lift; Seaman & Schuske Metal Work Co., St. Joseph, Mo., surge bin; Seedburo Equipment Co., Chicago, moisture tester; Orville Simpson Co., Cincinnati, scalper; Southwestern Supply & Machine Works, Oklahoma City, screw lift; Square D Co., Detroit, motor control center; Standard Products Div., Fairfield Engineering Co., Marion Ohio, holding bin; Stearns Magnetic, Inc., Milwaukee, magnetic separator; Stephens-Adamson Mfg. Co., Aurora, Ill., Redler conveyor; Strong-Scott Mfg. Co., Minneapolis, horizontal batch mixer, dump sink hopper.

Thomas Conveyor Co., Burleson, Texas, screw conveyor; Thomas Truck & Caster Co., Keokuk, Iowa, bag trucks; Toledo Scale Co., Fort Wayne, Ind., platform type scale.

Universal Hoist & Mfg Co., Cedar Falls, Iowa, bucket elevator; U. S. Electrical Motors, Inc., Los Angeles, Cal., variable drive.

Viking Pump Co., Cedar Falls, Iowa, liquid pump.

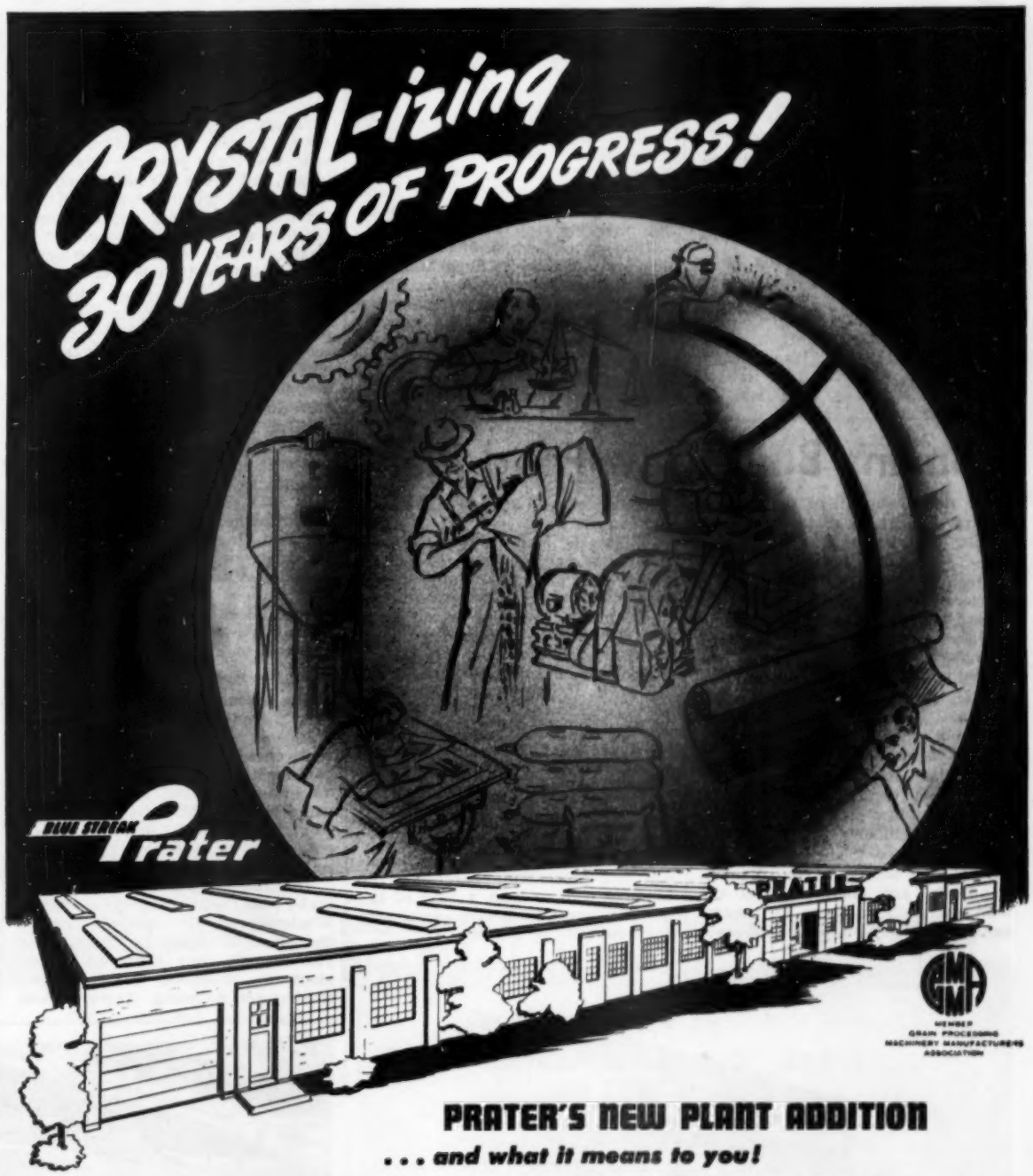
Wallace & Tiernan Co., Newark, N.J., feeder, scale feeder; H. K. Webster Co., Lawrence, Mass., labor; Weeks Engineering Co., St. Louis, strainers; B. I. Weller Co., Chicago, transfer bucket elevator; Wenger Mixer Co., Sabetha, Kansas, cottonseed holding bin, finished feed bin, pellet mill, revolving duster, pellet cooler and conditioner; W. C. Wiedenmann & Son, Inc., Kansas City, grain processing dust system; K. I. Willis, Moline, Ill., buckets.

Co-op at Sterling, Kansas, Expands Feed Operation

STERLING, KANSAS—Major expansion of the feed milling phase of the Farmers Co-op Union plant here has been announced by Willard Humphreys, manager. When the cooperative bought the Arnold Milling Co. less than a year ago, it was for storage. Now the full plant will be put to use.

Included in the expansion, which is expected to be completed by Jan. 1, is a new building to be used as a receiving station. A new 2-ton mixer will be installed, Mr. Humphreys said, as well as a new hammermill, roller mill and molasses mixer.

The cooperative will manufacture its own brands and do custom grinding. The mill building, in disuse since its purchase, will be utilized fully in the expanded feed program.



PRATER'S NEW PLANT ADDITION

. . . and what it means to you!

Prater's faith in the feed industry's future has been crystallized with the planning and building of new facilities—to handle the ever increasing developing needs of the industry.

By increasing present facilities 50% this project will offer many new economies, both production-wise and service-wise. With an enlargement of Prater's research and product development department, advancement will be made by the same men who pioneered and developed such engineering achievement as "twin-spiral" mixing and "triple-reduction" grinding.

This continuing program, with Prater putting all its experience and expanding facilities behind the designing and building of America's most efficient milling equipment, is the major growth factor in the rapid rise of Prater to its position of leadership in the feed manufacturing industry.

PRATER

PRATER PULVERIZER CO., 1515 S. 55th Court, Chicago 50, Ill.

"Our Past is only a Prologue to the Progress that lies ahead!"

The first Feed Production School sponsored by the Midwest Feed Manufacturers Assn. was held in November, 1950, at the Hotel President in Kansas City. The above picture shows the crowd of feed plant managers and superintendents and others at that first school. The fifth annual Midwest Feed Production School will be held Nov. 15-17 at the Hotel President. An all-time high in attendance is expected.

PRODUCTION SCHOOL

(Continued from page 8a)

And helping the progress of the school from beginning to end were such industry leaders as Ray Ammon, now with Vitality Mills, Inc., Chicago; Earl Branson, Archer-Daniels-Midland Co., Minneapolis; Guy Cooper, Jr., The O. A. Cooper Co., Humboldt, Neb.; Bob Greenlee, Nutrena Mills, Inc., Kansas City; Fred Hughes, now with Kansas Milling Co., Wichita; Clair Hull, Gooch Feed Mill Co., Salina; the late Charles Nathan, Feeders Supply & Mfg. Co., Kansas City; John Skaggs, formerly with Ralston Purina Co., Kansas City, and Ed Worth, L. C. Worth Commission Co., Kansas City.

Recalling these early days of the feed production school, Wiley Akins, now vice president of the Peter Hand Foundation, Chicago, recently made the following statement to me:

"During my term of office as president of the Midwest Feed Manufacturers Assn. I believe it was Elmer Winterscheidt who suggested at our 1949 directors' meeting that Midwest sponsor a feed production school.

"The directors thought it was an excellent idea, and our late secretary, Jack Dean, was instructed to go ahead with plans for the first school in 1950. A great deal of credit should go to Jack for his tireless preparation for the first school.

Success from the Start

"From the very beginning it was a huge success. I have attended each year, and every year the school gets bigger and better. Credit should also be given to the many national feed firms and machinery and equipment companies who have cooperated by sending their top-flight production men to help with this school.

"Lloyd Larson predicts that this year's school will again break all records. Where else could you, as a feed manufacturer, get so much for so little? One idea picked up at the school by your superintendent could save you thousands of dollars.

"The Midwest Production School is just one among many reasons why you are supporting the Midwest Feed Manufacturers Assn."

In 1951 several new subjects were added to the school curriculum. They included "Inventory Controls," "Cost of Production," "Handling of Fish Solubles, Vitamins Oils, Aintibiotics and Other Drugs," "Pre-Mixing," "Floor Stocks and Handling Truck Orders at Docks" and "Infestation Controls in Feed Mills."

Not a Convention

The association stressed the point that the production conference was a school, not a convention. The attentiveness of the first group in 1950 continued in the 1951 gathering and an interesting fact was that many came back to the second conference to get "re-exposed," or to review and catch up on new developments in milling technique.

The third annual conference was under the chairmanship of Elmer Winterscheidt. It covered most of the principal topics in the previous two schools, but expanded discussions on molasses handling, premixing and pelleting. Again, attendance held to greatest expectations and the event came to a successful conclusion.

Ed Worth, who was Midwest president two years ago, said that he was never so surprised in his life than at the attention which was given speakers when he was chairman of a session.

"It was astounding to me who had never attended such a meeting before, he said.

"Actually, at a convention people are always getting up and going in and out of the room, and disturbing the speaker. I thought perhaps the school was just a 'flash in the pan' the first year, but when I noticed that everybody came back for more the next year, I was convinced that it was a worthwhile, badly needed project."

When I inherited the task of executive vice president with the Midwest Feed Manufacturers Assn. in September, 1953, I was immediately aware of the fact that the first main job was the production school. Fortunately, in the interim following the death of Jack Dean, the plans for the school progressed smoothly under the able direction of such men as Oscar Straube, Pay Way Feed Mills, Inc., Kansas City, chairman, John Heimovics, Ed Worth and others. To the members of the production school committee and to Midwest members themselves, I owe much thanks for helping to break me in on the project of putting together a school worthy of Midwest sponsorship.

Permanent Fixture

Now a fifth Midwest Feed Production School is in session. It has become a "permanent fixture" in the feed industry. It continues to have nation-wide sanction, and we are pleased to be of service to the entire industry with such a function. It is interesting to observe, as some have to me, that this feed operation problem and Midwest's desire to do something about it helped point out the

Lipmans Build New Feed Plant

The new feed mill of the Lipman Poultry Co. at Augusta, Maine, is nearing completion.

The plant will principally produce the feed requirements of the Lipman brothers' poultry firm, one of the largest producers and processors of broilers in New England. The mill will have a capacity of 125 to 150 tons of feed per eight hour day.

It is a five story and basement structure, built of a combination of steel and lumber. It is located on the Maine Central Railroad just north of Augusta.

Machinery installation is now under way, and first production is scheduled for December.

W. R. Rafferty, Eastern Milling Co., Augusta, has served as consultant in the design and engineering of the plant and will continue as general manager and buyer for the feed operation, which will operate as Samuel Lipman Sons.

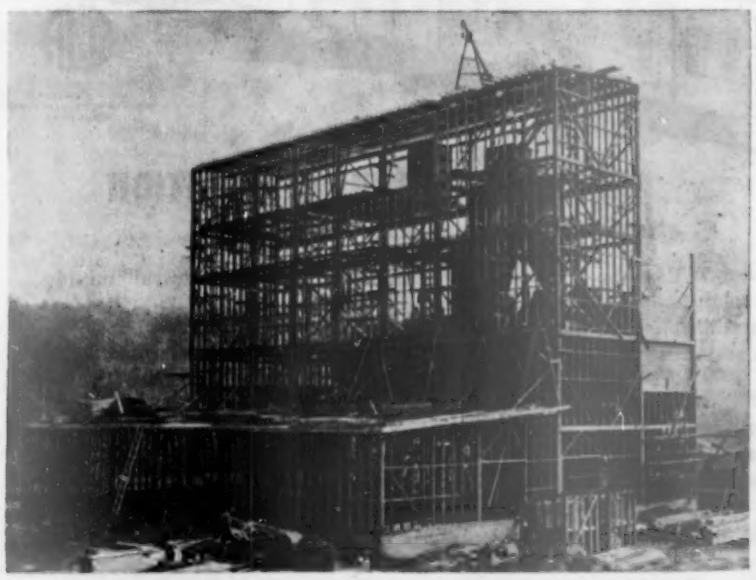
William E. Johnson, formerly with the Lawrenceburg (Ind.) Grain Co., has been engaged as plant superintendent.

The mill will employ a continuous line mix method of operation, using gravimetric feeders.

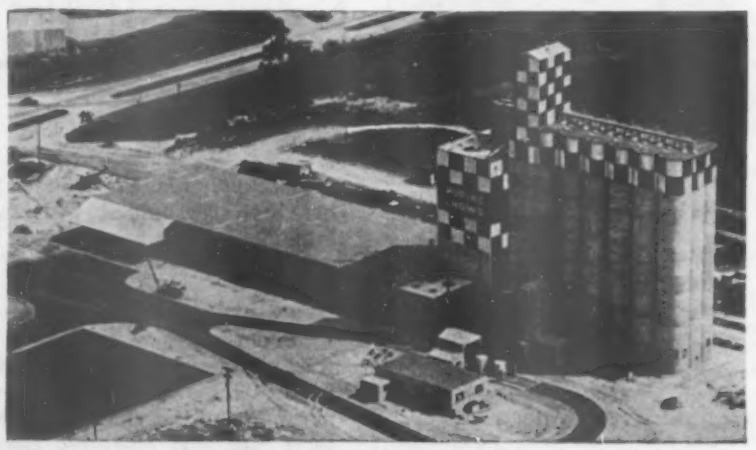
Among the principal machinery units, Mr. Rafferty said, will be two 75 h.p. California Pellet Mills and coolers, two 80 h.p. Bar-Nun hammermills and a battery of Merchen scale feeders. Condensed fish solubles will be stored in basement tanks.

The three Lipman brothers who operate the large poultry concern are Bernard, Harold and Frank.

In addition to their poultry hatchery and processing operations, the Lipmans own or lease a total of 125 growing farms, each with an approximate capacity of 25,000.



The Lipman feed mill at Augusta, Maine, while under construction. The new plant is now nearing completion, with machinery being installed.



PURINA MILL IN NORTH CAROLINA — Recently opened by the Ralston Purina Co. was this new feed plant at Wilson, N.C. The plant will have a capacity of approximately 100,000 tons annually. It will have grain storage capacity of 400,000 bu.

original need for the feed technology school at Kansas State College.

I cannot help but notice at these schools the opportunity to develop a spirit of camaraderie between management and personnel. Many mill presidents attend the school with delegations which include their superintendent and operatives. Then there are always numerous chances for production men to "talk shop," something that has never heppened before in the feed industry.

Registration High

This year, advance registrations reached an all-time high with an indicated attendance of over 350 persons. This new high in registration is a sign of the feed industry's recognition and support of the production school idea.

In closing, I want to express my sincere appreciation to the many feed milling firms and companies who manufacture machinery, equipment and supplies for the feed trade who have contributed so generously of their personnel and talent to appear on the feed school curricula over the years. It is truly significant that the feed industry is willing to share its know-how with each other. This fact, above all others, has made the Midwest Feed Production School a reliable source of operative information to the industry—information that is not obtainable by industry from any other source.

NEW FEED MILL

GREEN LAKE, WIS.—A new feed mill operated by Fred Kaatz was opened here recently. Mr. Kaatz built a new building and purchased new machinery for the grinding of feed. He will handle all types of feed.

ELEVATOR ADDITION

OKLAHOMA CITY — Construction started recently on the 320,000-bu. concrete elevator addition to the Kingfisher (Okla.) Co-operative elevator.

SCHOOL COMMITTEES

(Continued from page 54a)

Exchange, Inc., Buffalo; James North, Nutrena Mills, Inc., division of Cargill, Inc., Minneapolis; John J. Vanier, Gooch Feed Mill Co., Salina, Kansas; Robert E. Wendland, Wendland Grain Co., Temple, Texas; Elmer Winterscheidt, Winterscheidt Grain & Feed Co., Seneca, Kansas.

Committee membership is the same as when the group was first organized, except for Mr. Ammon and Mr. North, who were elected last May to fill the vacancies caused by the deaths of Wirt D. Walker, Arcady Farms Milling Co., Chicago, and R. E. Whitworth, Nutrena Mills, Minneapolis.

Technical Committee

The general committee also has various sub-committees. One of these is the technical committee, which was active in planning the school feed mill and obtaining and arranging for installation of equipment for the mill.

Members of the technical committee, which includes members from the general committee and other members as well, are:

Paul O. Berg, Fort Wayne, Ind.; Mr. Cox; Mr. D'Arcy; D. K. English, Ralston Purina Co., St. Louis; John F. Heimovics, J. B. Ehrsam & Sons Mfg. Co., Enterprise, Kansas; D. V. McDonald, Nutrena Mills, Minneapolis; R. S. Sheehy, Quaker Oats Co., Chicago; G. F. Thomas, Prater Pulverizer Co., Chicago; Mr. Vanier; Mr. Winterscheidt. Mr. Berg is consulting engineer and Mr. Heimovics installation engineer for the group.

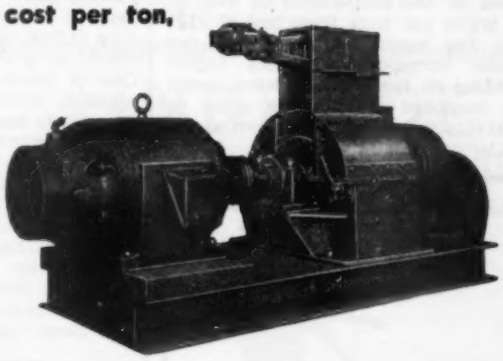
The general committee also has other subcommittees, made up of members of the general advisory group. These include finance, scholarship, public relations, research, curriculum and nominating.

MANUFACTURERS OF THE FAMOUS GRUENDLER HAMMERMILL SINCE 1885

PRODUCE BETTER FEEDS
WITH GRUENDLER EQUIPMENT

— more uniformity, cooler grinding, lowest cost per ton, minimum upkeep

AMERICA'S LEADING HAMMERMILL



● Slow Speed and High Speed Center Feed Grinders for all free-flowing grain produce highest quality formula feeds. Gives uniformity, cool ground product, large capacity, with minimum upkeep.

GRUENDLER HAY GRINDER

● For suncured hay. Automatic feeder, variable feed control, one-shot lubricating system. Famous for producing standard alfalfa meal or preparing for further reduction by our slow speed and high speed center feed grinders. Long life and economical service.

For dependable production, greater uniformity of product and lowest cost per ton, GRUENDLER has long been the basis for comparison.

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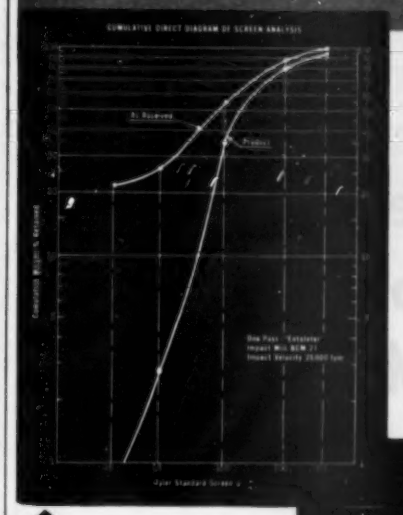
"Our 69th Year"

"BETTER LIVING THROUGH BETTER FEEDING"

PARTICLE SIZE REDUCTION BY IMPACT!



Typical particle size curves . . . before and after processing material on the "ENTOLETER" Impact Mill

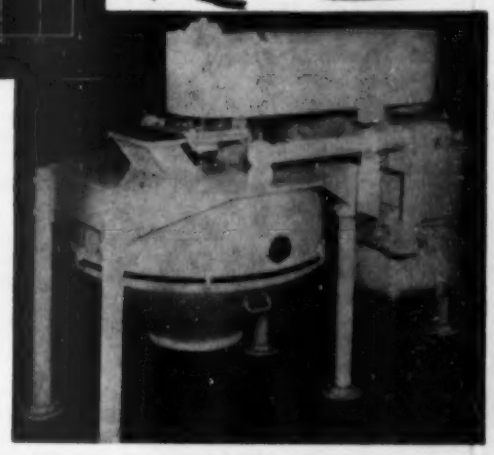
High Productivity Rates per HP expended

Narrow Particle Size Range... reduces quantity of "super fines"

Minimum Product Heating... refrigeration rarely required

High Impact Velocities . . . to 25,000 feet per minute depending on application

Capacity . . . up to 10,000 pounds per hour or higher on friable materials



Belt Drive "ENTOLETER" Impact Mill equipped with 25 HP motor

COMPACT . . .

a unit processing over 5 tons per hour occupies less than 14 square feet

SIMPLIFIED MAINTENANCE . . .

the single rotor and impact segments are readily removable for replacement

LABORATORY RESEARCH and DEVELOPMENT . . .

Send Us Your Samples Today . . . Possibilities for new "ENTOLETER" Impact Mill applications are being worked on continually in our laboratory in New Haven. We shall be glad to process samples and return them to you for your evaluation.

THE "ENTOLETER" IMPACT MILL...

NOW AVAILABLE IN TWO CAPACITY RANGE MODELS...

The trademark "ENTOLETER" is your guarantee of complete satisfaction

Mail This Coupon Today!

☐ I am sending a product sample (5-25 lbs.) to be processed free of charge.
☐ Send me additional information about the "ENTOLETER IMPACT MILL".
☐ Have a representative call.

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ENTOLETER DIVISION
The Safety Car Heating and Lighting Company, Inc.
1161 DIXWELL AVE., NEW HAVEN 4, CONN.

Supplying Steam For Pelleting

By Robert C. Otteman
Design Engineer
Nebraska Boiler & Supply Co.

Steam plays an important part in pelleting operations, and there are certain other applications for steam in feed plants.

In this connection, certain factors should be considered in providing boiler facilities.

First, in regard to the part steam plays in pelleting, the feed miller might ask: "How does steam affect my pelleting operation?" In answer to this question, the most important point is proper conditioning of the meal.

As steam is added into the mixing chamber of the pellet mill in a vapor state, it comes in contact with all the meal particles. As the steam is cooled by the meal, moisture is condensed on each particle, producing uniformly conditioned meal. The moisture acts as a bonding agent, holding the meal particles in their extruded shape and providing a glossy finish. If insufficient steam is added, the pellets may tend to fall apart and may have a dull finish.

Introducing water into the mixing chamber results in uneven distribution as some meal receives an excess of moisture, tending to "ball-up," while other meal remains dry. This permits very little control of the final product.

To aid in conditioning meal steam temperature and pressure are readily adjustable. The quantity of steam flowing can also be held constant or is easily adjustable.

Aids Production

Properly conditioned meal plays as equally an important role in pelleting production as it does in the pellet itself. Forcing dry meal through the die results in excessive friction, heating both the die and meal. This increased loading on the die decreases its life. The moisture in properly conditioned meal acts as a lubricant, reducing the frictional resistance of the meal. This permits maximum pelleting capacity with only a small temperature rise between meal and pellets. Improperly conditioned meal requires greater loading on the motor and bearings, increasing operating and maintenance costs.

In addition to its use in pelleting, an ideal application for steam lies in maintaining molasses at a desired temperature to facilitate handling.

Other steam applications in the plant may include plant heating and miscellaneous cleaning.

In selecting a boiler to provide steam for feed plants, there are several points to consider.

A qualified boiler representative will size a boiler which will economically handle the plant's maximum and normal steam demands.

For satisfactory operation, a good boiler design is necessary. The amount of heating surface is important, but of greater importance is the surface arrangement to effect fuel economy. A boiler tube will absorb four times more heat when hot gasses are flowing across the tube at a given rate than when flowing parallel to the axis of the tube. To compensate for this factor, some boilers employ a fan to force the hot gasses through restricted passages. This fan, it may be noted, adds to operating costs.

Some boilers have a limited amount of heating surface per boiler horsepower. (A boiler horsepower is defined as the evaporation of 34.5 lb. of water per hour from and at 212° F.) The lesser heating surface per boiler horsepower imposes higher loading on the tubes and can result in excessive maintenance costs or inability to reach rated output as the boiler remains in operation.

The maximum capacities of water-tube boilers are considerably above their rated output, permitting higher reserve capacities.

In selecting the boiler he needs, a plant operator should check the furnace heat release rate, heat transfer rate per square foot of heating surface and general construction.

Installation

Another factor to consider in providing boiler facilities is installation. It may be noted that a complete factory assembled boiler with firing equipment and controls will require a minimum installation expense. These boilers are fire tested to assure coordination of controls, and they are ready to connect to the fuel, feedwater, blow-down and electrical services and stack.

Safety is another thing to keep in mind. Safety controls cannot remove the inherent boiler hazards but will accurately and reliably control the burner and boiler accessory equipment to prevent conditions from building up to a hazardous classification. A boiler manufacturer can select standard control elements to meet requirements. These standard accepted elements furnish maximum safety and are available for replacement.

In the installation, ample clearance should be allowed around a boiler to permit servicing and unrestricted operation. Also, location is important in minimizing installation costs of connecting to the system, stack and breeching. The plant operator should consult his state boiler inspection office to assure compliance with installation regulations.

For proper operation of boilers, treatment of feedwater is necessary. Competent feedwater treatment chemists should be consulted to determine the amount and type of treatment necessary as water varies in composition throughout the country. The use of a water softener does not assure proper treatment. As raw water make-up contains impurities and practically none are removed with the steam, the build-up in the boiler has to be removed by blowing down part of the water containing high concentrations. The recommendations of the feedwater chemist should be adhered to rigidly.

Summarizing economic considerations in providing boilers for feed plants, there are certain points to keep in mind. Initial cost is not the only factor, and equal consideration should be given to the other factors. One of these factors is installation expense, which is the least with a completely assembled "package" boiler with controls and firing equipment installed, ready to connect to the services. Another consideration is operating costs, which should include fuel and electrical expenses for operating auxiliary equipment. A fourth consideration is maintenance costs, which are reduced in good boiler design as the boilers will be simplified and there will be easy accessibility.

Accident Rates

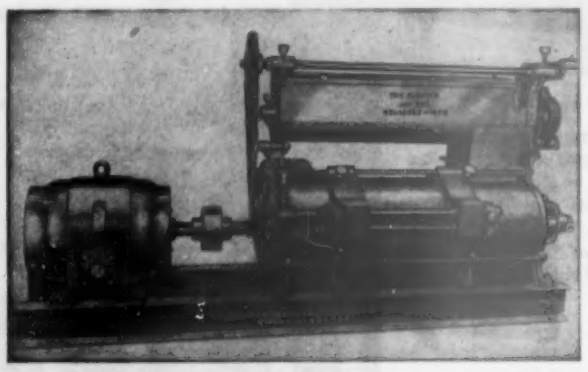
CHICAGO — The National Safety Council has published a booklet on accident rates in 1953 in the food and other industries. Included in the publication is information on injury rates in the grain milling field, which covers the feed manufacturing industry as well as other milling activities.

The booklet contains the 1953 accident experience of companies which report to the National Safety Council.

ELEVATOR ADDITION

FARNHAMVILLE, IOWA — Increased storage capacity at the Farmers Co-op Elevator Co. has been made possible with the construction of an annex, including five steel grain bins, each 21 by 56 ft. in size. The project cost about $44,000.

Increase Your Profits With a Puritan Molasses Mixer



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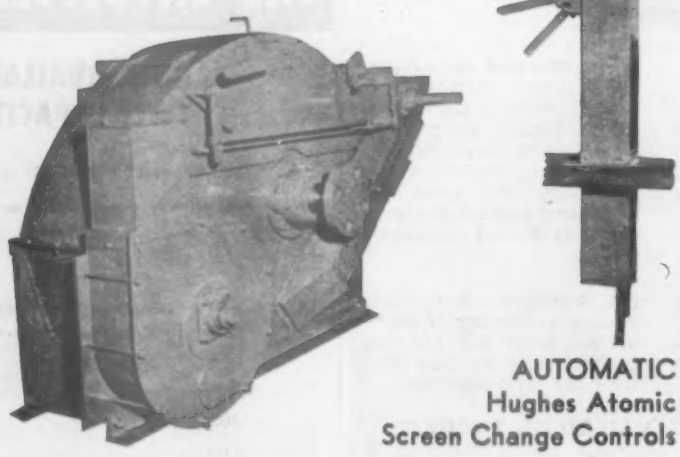

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MORE EFFICIENCY

(Continued from page 5a)

ciency and labor-saving, conveying of materials has improved, with more and better conveying facilities.

Packaging operations also have become faster and more efficient and more automatic, handling more and new types of packages more rapidly and accurately.

Simultaneously, there has been an increase in bulk delivery of feed, with provision for bulk handling and loading out of finished feeds.

Each new development has had its effect on bins in feed mills. More bulk ingredients, more types of feed, more processing—all have resulted in more and better bins. The subject of bins in feed plants is covered in one of the articles in this section.

More types of feeds, more types of packages and more truck orders have led to another important modern development—more efficient handling and warehousing of finished feeds. Conveying systems for bagged feeds have been increased and improved, and there has been a great increase in the use of fork lift trucks and pallets.

A part of this development in many plants has been a policy of keeping each production run longer, cutting down on lost changeover time, and then running more or all feeds into the warehouse for distribution or warehousing from there.

One of the articles in this special section deals with an efficient handling and warehousing system for finished feeds.

Plant Types

Because of more types of feeds and other factors, there has been in recent years more emphasis on modern, efficient batch type plants. The particular area of the country, and the types of feed in demand, in general dictates a plant design, but industry authorities in recent years have talked more of smaller plants, using locally grown grains and being closer to the area served.

At the same time, recent thinking as noted above, has placed emphasis on longer runs, greater warehouse space, and the running of more feed into the warehouse for handling from there. This has resulted in more thought of continuous type mixing operations, using modern and accurate feeders, with longer and larger runs.

The importance of good employee relations hase been one of the points stressed in modern feed plant operations, and this has been reflected in better locker room and other facilities for plant workers.

Another recent development in the grain handling and processing field has been the demand for better insect control, something which has drawn more attention among feed plant operators.

Feed mill buildings, too, have come in for more attention, with the industry noting the importance of good, fireproof construction.

Plant construction and improvements have by no means been confined to the larger mills. Relatively small retail and custom mills also have come in for their share of new building, improvement and modernization. For example, there have been trends toward more bulk handling and storage of ingredients, more and better mixing facilities, better materials handling and better and more efficient packaging and handling of finished feeds.

With all of this attention to improved and more efficient plants and equipment, the human element still cannot be forgotten. Modern feed manufacturers are finding it necessary to pay more attention to good production planning, work standards and better personnel handling and training.

While feed production efficiency and volume have generally been increasing, most industry authorities readily acknowledge that nutrition in recent years has run ahead of production and sales and many plants have found their costs too high. This has further emphasized the need for new or continued plant improvements and better supervised and trained employees.

The need for well trained feed technologists and production supervisors is reflected in the establishment and progress of the Midwest Feed Production School and the feed technology program at Kansas State College.

Plans for the Feed Technology School at Kansas State College were worked out and announced in 1951. Industry leaders, seeing the need for talented and trained men in the growing and increasing technical industry, announced the plans in May, 1951, after the idea had originated about a year earlier.

Mineral Feed Firm Adds New Blending Plant

KANSAS CITY — The Columbian Hog & Cattle Powder Co. currently is undergoing extensive remodeling and additions to its Kansas City plant. Additions include a new push-button mineral feed batching plant and bulk handling system.

The new batching system which is being added to the plant is shown in the picture above.

The new blending and mixing system consists of 22 bulk batching bins which supply the feed by remote control through power feeders into a 2-ton batching scale. These batching bins have a total capacity of 600 tons of raw material.

Unloading of raw materials into bulk storage is through an automatic scale which weighs all material into the bulk storage.

The material is conveyed from the scale to either a two-ton or a one-ton horizontal batch mixer. Each of these mixers has bins above and below and feed into separate bins over a Richardson Duplex E automatic bagging scale. The conveyor and bag closing machine were designed especially for this operation. The filled and sewn bag is dropped by gravity to the distribution floor for routing to railroad cars, trucks or storage.

A separate mixing system is in use for the blending of pre-mixes which are later stored in mixing bins over the batching scale. Quality control is checked through automatic recording of the amount and kind of each ingredient in each batch of feed manufactured. This recording is made on a printed tape which is kept as a permanent record. The control of the blending and mixing system is from one point by one operator.

Combs & Co., Kansas City, is the contractor.

Sacking of the Columbian supplement is handled from a Richardson Duplex E automatic bagging scale. The filled bag drops onto a Combs conveyor-type sewing machine with a Union Special 80600 head.

INDEX OF ADVERVISERS

New Mill Survey Section

Aeroglide Corporation 20a
Anderson, V. D., Co. 12a
Arid Aire Mfg. Company 43a
Bartlett, The C. O., & Snow Co. 40a
Brower Manufacturing Co. 44a
Bryant Engineering Co. 13a
Burrows Equipment Co. 53a
California Pellet Mill Co. 11a
Combs & Co. 19a
Crippen Manufacturing Co. 18a
Day Company, The 44a
Dixie Machinery & Mfg. Co. 52a
Duplex Mill & Mfg. Co. 29a, 30a
Ehrsam, J. B., & Sons Mfg. Co. 34a
Entoleter Division 57a
Fischbein, Dave, Co. 50a
Forster Mfg. Co. 51a
Gruendler Crusher & Pulverizer Co. 57a
Gump, B. F., Co. 46a
Hart-Carter Co. 47a
Hayes & Stolz Manufacturing Co. 20a
Helm Manufacturing Co. 41a
Howes, S., Co., Inc. 49a
Hughes Engineering Co. 58a
Ibberson, T. E., Co. 31a
Jacobson Machine Works 35a
Jones-Hettelsater Const. Co. 60a
Laboratory Construction Co. 36a
Longhorn Engineering Co. 48a
Minneapolis Sewing Machine Co. 26a
Myers-Sherman Co. 18a
National Oats Co. 25a
Nebraska Boiler & Supply Co. 23a
Omega Machine Co. 50a
Paper-Calmenson & Co. 15a
Prater Pulverizer Co. 55a
Puritan Manufacturing Co. 58a
Randolph, O. W., Co. 17a
Rapids Machinery Co. 50a
Richardson Scale Company 10a
Richmond Mfg. Co. 26a
Schutte Pulverizer Co. 43a
Seedburo Equipment Co. 37a
Sprout, Waldron & Co., Inc. 10a
Strong-Scott Mfg. Co. 24a
Union Special Machine Co. 36a
W. W. Grinder Corporation 25a
Wagner Machine & Mill Supply Company 27a
Wallace & Tiernan Co., Inc. 22a
Weller, B. L., Co. 33a
Wenger Mixer Co. 38a, 39a
Western Waterproofing Co. 31a
Williamson, John W., & Sons 34a

WHEN YOU PLAN YOUR FEED MILL PLAN FOR *Experience*

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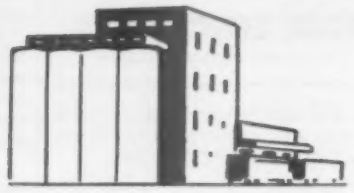

A PARTIAL RECORD

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Delmar, Del.
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Richmond, Indiana
St. Johnsbury, Vermont
Spokane, Wash.
Shreveport, La.
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Wilson, N.C.

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PILLSBURY MILLS, INC.
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Formula Feed Production and Consumption, by States, 1952-53

IN TONS

State	Consumption of Commercial Feed		Production of Formula Feed		Consumption of Formula Feed		Consumption of Poultry Feed		Consumption of Dairy Feed		Consumption of Swine Feed		Consumption of All Other Formula Feed	
	1952	1953	1952	1953	1952	1953	1952	1953	1952	1953	1952	1953	1952	1953
Alabama	*576 916	617,068	567,000	615,680	498,554	529,243	249,602	278,245	96,709	114,468	39,142	33,412	113,101	103,118
Arizona	241,851	278,282	63,000	47,250	113,206	129,559	82,000	91,000	25,000	31,000	2,000	3,659	4,206	3,900
Arkansas	838,592	686,643	428,000	355,240	621,190	516,557	412,797	291,588	114,039	162,105	62,385	20,419	31,969	42,445
California	3,900,000	3,997,067	3,354,000	3,352,700	3,490,000	3,337,000	2,279,295	2,147,100	607,500	676,700	61,000	61,200	542,205	452,000
Colorado	320,822	280,861	157,500	118,125	275,000	244,189	166,000	164,500	30,000	29,089	21,000	19,500	58,000	31,100
Connecticut	.....	.....	157,500	166,950	520,000	514,000	359,000	364,690	150,000	138,200	1,500	1,515	9,500	9,595
Delaware	543,297	446,551	456,000	510,720	489,826	361,446	472,794	341,008	13,402	15,060	1,000	2,980	2,630	2,398
Florida	971,688	945,851	383,500	398,840	700,000	748,400	484,000	515,360	172,500	191,400	33,000	30,720	10,500	10,920
Georgia	*1,224,545	1,187,160	448,434	466,370	1,151,549	1,125,319	820,000	822,800	202,500	209,500	95,000	81,919	34,049	11,100
Idaho	.....	.....	76,500	57,375	125,000	114,000	82,000	79,000	22,500	19,000	16,000	14,000	4,500	2,000
Illinois	.....	.....	2,457,000	2,407,880	1,282,956	1,291,000	693,000	782,389	82,500	88,300	334,000	311,200	173,456	109,111
Indiana	1,350,078	1,320,368	1,191,500	1,167,670	1,116,369	1,101,054	561,813	575,090	187,946	192,577	278,008	247,515	88,597	85,872
Iowa	1,642,668	1,746,440	1,008,000	977,760	1,430,000	1,590,000	628,000	817,000	52,500	74,000	529,000	527,400	220,500	171,600
Kansas	.....	.....	535,500	519,435	578,592	544,000	374,592	411,900	60,000	37,000	73,000	72,500	71,000	22,600
Kentucky	648,800	662,267	428,000	479,360	473,740	533,825	216,787	208,108	134,229	142,667	51,249	49,259	71,475	133,791
Louisiana	529,256	547,175	220,500	229,320	308,385	323,220	128,733	136,745	127,821	130,622	4,136	2,995	47,695	52,858
Maine	.....	.....	189,000	200,340	490,000	494,900	330,000	333,300	120,000	121,200	22,000	22,220	18,000	18,180
Maryland	.....	.....	441,000	493,920	810,000	808,300	698,000	724,920	82,500	72,800	8,000	8,520	21,500	2,060
Massachusetts	.....	.....	535,000	564,300	869,000	814,690	636,000	632,060	200,000	160,700	17,000	17,370	16,000	4,560
Michigan	.....	.....	307,500	301,350	640,000	627,400	491,408	519,500	57,500	29,700	31,000	30,200	60,092	48,000
Minnesota	921,106	903,944	1,070,000	1,105,600	670,334	697,437	396,402	413,037	100,000	122,000	150,000	144,400	23,932	18,000
Mississippi	*577,681	568,915	309,500	321,880	396,053	393,840	211,356	220,255	119,405	118,000	18,157	11,698	47,135	43,887
Missouri	1,483,384	1,460,270	1,727,000	1,675,190	1,120,610	1,065,946	508,950	362,406	278,642	213,180	161,114	106,590	171,904	383,770
Montana	.....	.....	61,500	46,125	260,000	220,000	146,000	128,100	52,500	42,500	16,000	12,400	45,500	37,000
Nebraska	601,879	554,844	535,500	519,435	454,116	519,835	159,647	150,331	11,311	17,622	76,142	64,962	207,016	286,920
Nevada	.....	.....	.....	.....	35,000	34,000	24,000	23,100	7,500	7,000	500	1,450	3,000	2,450
New Hampshire	.....	.....	189,000	200,340	245,000	237,500	169,000	161,690	70,000	70,700	2,000	2,020	4,000	3,090
New Jersey	870,382	870,382	567,000	549,990	800,000	796,000	560,000	565,600	200,000	214,000	7,000	3,470	33,000	12,930
New Mexico	.....	.....	55,000	41,250	210,000	200,000	146,000	140,000	45,000	44,000	8,000	7,000	11,000	9,000
New York	.....	.....	4,651,000	4,211,470	3,110,000	3,159,100	1,475,500	1,520,255	1,462,500	1,489,125	130,000	127,700	42,000	22,020
North Carolina	926,787	997,929	784,000	815,360	782,910	842,860	519,215	565,058	139,600	145,393	95,989	101,225	28,106	31,184
North Dakota	50,482	45,030	63,000	68,040	37,953	35,173	22,436	25,992	2,820	2,460	2,108	2,182	10,589	4,539
Ohio	1,247,168	1,152,746	2,898,000	2,841,040	750,000	757,500	432,000	446,320	120,000	136,000	172,000	169,900	26,000	5,280
Oklahoma	920,393	1,035,425	333,500	276,805	452,009	493,940	220,345	227,043	161,787	205,230	24,987	31,830	44,890	29,837
Oregon	.....	.....	370,500	380,140	475,000	460,750	260,000	255,000	162,000	168,000	17,000	14,000	36,000	23,750
Pennsylvania	.....	.....	1,869,500	1,813,415	1,595,000	1,591,900	992,000	1,046,020	465,000	428,350	43,000	53,630	95,000	63,900
Rhode Island	.....	.....	.....	.....	115,000	116,145	68,000	66,680	45,000	47,450	500	500	1,500	1,515
South Carolina	329,883	339,971	155,000	161,200	277,032	319,714	187,986	225,913	42,874	53,207	29,682	24,651	16,490	15,943
South Dakota	165,675	153,627	51,500	55,620	137,000	120,000	68,000	63,000	7,500	6,500	34,000	33,000	27,500	17,500
Tennessee	*579,096	557,916	1,216,500	1,265,160	550,000	520,000	350,000	375,100	90,000	61,100	66,000	69,000	44,000	14,800
Texas	4,405,676	4,117,344	2,032,500	1,686,975	2,861,000	2,240,000	1,326,000	1,138,000	460,000	332,000	113,000	109,400	962,000	660,600
Utah	.....	.....	300,000	225,000	88,500	80,500	60,500	55,500	19,500	17,500	500	600	8,000	6,900
Vermont	.....	.....	355,000	366,300	664,000	655,040	384,000	431,940	246,000	207,160	1,000	810	33,000	15,130
Virginia	825,293	.....	630,000	655,600	835,000	793,437	595,500	533,236	142,500	140,641	52,000	35,627	45,000	83,933
Washington	.....	.....	509,500	530,260	520,000	491,000	330,000	337,100	152,000	105,700	13,000	13,800	25,000	34,400
West Virginia	369,300	390,123	63,000	70,560	304,228	326,990	176,498	212,413	77,483	78,965	18,000	14,988	32,247	20,624
Wisconsin	*919,337	948,926	378,000	408,240	649,961	688,484	249,820	279,380	131,048	143,637	43,551	49,720	225,542	215,747
Wyoming	.....	.....	61,000	45,750	160,000	142,000	82,000	77,000	7,500	3,500	1,000	1,000	69,500	60,500
Totals*	.....	.....	34,640,434	33,767,310	34,539,073	33,747,193	20,286,981	20,281,772	7,358,616	7,257,008	2,975,650	2,766,056	3,917,826	3,442,357

*Indicates 1952 figures revised.

Feedstuffs again has prepared a report setting forth the production and consumption of formula feed, by states, in the U.S.

Total formula feed production and consumption in each state for the calendar years 1952 and 1953 are shown. Also listed are the amounts of poultry, dairy, swine and other formula feeds used in each state.

The Feedstuffs research department, directed by L. R. McDonald, prepared the report. The state figures are from state government reports, where available, or are estimates made by the Feedstuffs research department.

In addition to showing the consumption of formula feed, the report gives figures on consumption of all commercial feed in the states reporting such figures.

As reported previously total formula feed production and consumption in 1953 showed a 2% decline from 1952. This was attributed in considerable measure to the drouth in southern areas in 1953.

Total formula feed consumption in the U.S. in 1953 is shown to be 33,747,193 tons, compared with 34 539,073 tons in 1952. The 1953 total includes 20,281,772 tons of poultry feed, 7,257,008 tons of dairy feed, 2,766,056 tons of swine feed and 3,442,357 tons of other feed.

It will be noted that most states showed at least some decline in formula feed consumption in 1953 as compared with 1952.

This report covering formula feed production and consumption by states is the second such report prepared by Feedstuffs. The first report, for 1952 only, was published last year.

Certain terms for feeds have specific meanings. However, since many persons use the terms interchangeably, specific differences in terminology tend to become less clear. Accordingly, for purposes of clarification in connection with this report, various terms are defined as follows:

Formula feeds are feeds mixed specifically for certain species of animals and for certain uses. Formula feed is made according to a specified formula, and to meet certain requirements of the animal for which it is formulated.

Mixed feed generally is the same as formula feed, although in this sense the term has been dropping out of the industry vocabulary. The term also covers simple mixtures of ground grains or other ingredients.

Feed ingredients are straight feeds such as alfalfa meal, oilseed meals, fish meal, meat scraps, millfeed, distillers and brewers dried grains, corn gluten feed and meal, dried skim

(Continued on page 73)

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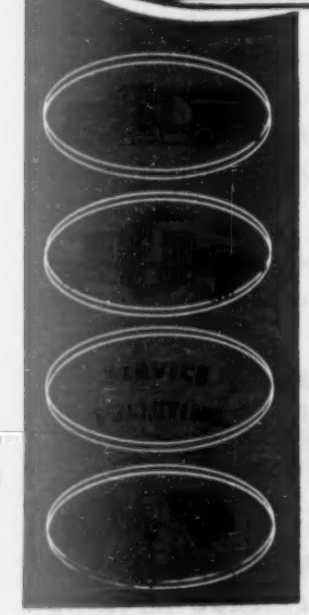

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Benson Praises Industry for Drouth Program Cooperation

KANSAS CITY—Ezra Taft Benson, secretary of agriculture, praised the feed industry for its cooperation in the drouth program when he was in Kansas City Oct. 28. The secretary said the program is of vital importance to large sections of the country in preventing the unwise liquidation of foundation herds by making it possible for the feed grain supplies to take the place of burned out hay and forage crops.

"We appreciate the fine way in which the feed industry is taking hold of this program," the secretary said in a talk which was recorded for later broadcast at the Missouri Feed Conference at Columbia Oct. 28.

"We felt that you would meet the challenge, seeing to it that producers who are in dire need can get grain and mixed feed at reasonable prices in the emergency," Mr. Benson continued. "Our reports indicate that you are doing just that and that the competitive free enterprise system is once more getting a tough job done with efficiency.

"It is a real public service effort, and I know you will carry through to the end of the crisis in the same cooperative spirit. The economic welfare of many regions depends on our success in meeting the drouth emergency."

Following a press conference, the Secretary met with representatives of the Midwest Feed Manufacturers Assn., and discussed some of the current problems with the association president, Max Shields, Albers Milling Co.; Oscar Straube, Pay Way Feed Mills, and Lloyd Larson, executive vice president of the Midwest association, all of Kansas City.

Mr. Straube told the secretary that reports he had from the country indicated that farmers were pleased with the current drouth program. The feed industry is doing its best to assist in the program, he said.

Mr. Benson declared that USDA is opposed to price-supporting purchases of eggs and poultry.

"Back in 1948 the Secretary of Agriculture attempted a support program on eggs," Mr. Benson recalled. "The whole program failed. It cost the government $190 million and disrupted the poultry industry. As a result, the poultry industry advisory committee, made up largely of producers, has recommended twice this year that we do not enter upon a government buying program for poultry and eggs. We are doing what we can to move some of these products into export through FOA, urging the Army to advance its purchases, and we are moving some into the school lunch program."

Sound movies were made of the conference and were shown by Mr. Larson at the Missouri Feed Conference in Columbia later in the day and also put on a TV program telecast from Station KOMU in Columbia.

In extending greetings to the conference, Mr. Benson said: "I don't know of any group in agriculture which is rendering a greater service to the prosperity of this country and the welfare of agriculture than those of our people who work, very undramatically, in this great field of research. I was very pleased that the 83rd Congress saw fit to increase research appropriations by some $20 million for research and education. This is the greatest single increase we have ever had in these funds in one year. Any long time program with value to agriculture must have as its foundation adequate basic and fundamental research as well as applied research."

John R. Weddle

PROMOTED—Appointment of John R. Weddle as manager of the company's millfeed department has been announced by W. M. Steinke, executive vice president, Russell-Miller Milling Co., Minneapolis. Mr. Weddle, whose headquarters will be in Minneapolis, was first associated with Russell-Miller in 1949. For two years he was manager of a branch warehouse at Waseca, Minn., before being transferred to the company's Minneapolis office in 1951 as assistant purchasing agent, northwest feed division, which position he held prior to his new appointment.

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USDA Designates Additional Drouth Emergency Areas

WASHINGTON—The secretary of Agriculture, Ezra Taft Benson, has designated 30 additional counties in three states — Texas, Oklahoma and North Carolina — as drouth disaster areas where eligible farmers and ranchers may participate in the feed and other drouth emergency programs.

At the same time it was announced that, following studies in the affected areas, the USDA drouth committee declined to recommend disaster designation for Florida and additional counties in Utah, and postponed final decision on Virginia pending further survey of drouth conditions in that state.

Newly-designated counties include:

Texas (17)—Clay, Coke, DeWitt, Garza, Guadalupe, Hardeman, Haskell, Irion, Karnes, Live Oak, McMullen, Motley, Nolan, Shackelford, Sterling, Sutton, Tom Green.

Oklahoma (4)—Canadian, Cotton, Kay, Texas.

North Carolina (9) — Almance, Davie, Durham, Franklin, Granville, Montgomery, Orange, Rowan, Warren.

Designation of these counties brings to 918 the number of counties in 17 states to be listed as drouth disaster areas in the current emergency. These include: Alabama 56; Arkansas, 68; Colorado, 28; Georgia, 124; Kansas, 41; Louisiana, 28; Mississippi, 58; Missouri, 81; Nevada, 10; New Mexico, 24; North Carolina, 39; Oklahoma, 77; South Carolina, 46; Tennessee, 88; Texas, 127; Utah, 4; and Wyoming, 19.

JOINS FEED SALES FORCE

SPRINGFIELD, MINN. — Personnel changes have been announced by Trig Helleloid, manager of the Springfield (Minn.) Milling Corp. Mike Franz, superintendent of production in the feed department, has been named sales representative, replacing Eyler Mikaelsen, who resigned because of ill health. Garfield Bloedow, formerly warehouse foreman, has been named production superintendent.

George P. McCarthy

George P. McCarthy Elected to AFMA Executive Committee

CHICAGO — George P. McCarthy, executive vice president, Universal Mills, Fort Worth, was recently elected to the nine-man executive committee of the board of directors of the American Feed Manufacturers Assn., according to an announcement by the AFMA secretary-treasurer, W. T. Diamond.

For the past 10 years, Mr. McCarthy has taken an active part in all AFMA work and assumed leadership in several association groups. He served as chairman of the AFMA Nutrition Council in 1948, and in 1952 was elected to membership on the board.

Mr. McCarthy fills the unexpired term of Fred W. Thomas, who resigned in July, 1954. This term runs through the May 25, 1955, annual meeting, when an election will be held to determine personnel of the executive committee for the following year.

Others now serving on the Executive Committee include D. K. Webster, Jr., H. K. Webster Co., Lawrence, Mass., AFMA chairman; Harry Truax, Farm Bureau Milling Co., Hammond, Ind.; J. C. North, Nutrena Mills, Inc., Minneapolis; R. D. Jackson, Jackson Grain Co., Tampa, Fla.; Wayne Longmire, Security Mills, Knoxville, Tenn.; Troy V. Cox, Albers Milling Co., Los Angeles; Lloyd S. Riford, The Beacon Milling Co., Cayuga, N.Y.; Oscar M. Straube, Pay Way Feed Mills, Kansas City.

Program Announced by Tennessee Feed Group For Convention Nov. 7-9

NASHVILLE—Program plans have been completed for the annual convention of the Tennessee Feed Manufacturers Assn. at the Hermitage Hotel here, Nov. 7-9.

Heading the speakers' panel will be J. D. Sykes, vice president, Ralston Purina Co., who will speak on merchandising and trends in the industry; Dr. Sterling Brackett, Fine Chemicals division, American Cyanamid Co., who will discuss antibiotics especially as they pertain to poultry diseases, and W. M. Gearhart, chief chemist, Chemical Sales Development Laboratory, Eastman Chemical Products, Inc., whose topic will pertain to the use of animal fats in feeds.

Other speakers will include Frank M. DeFriese, farm management specialist, University of Tennessee, and E. C. McReynolds, associate director, extension department, University of Tennessee.

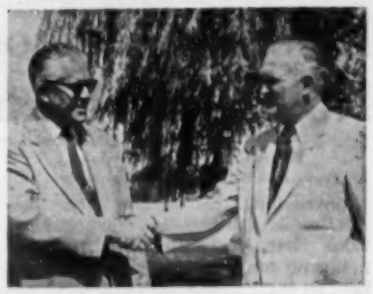
W. H. Levine, secretary of the group, states that convention features will be a credit panel discussion and the annual social functions.

John W. Cain, Milling Firm Executive, Dies

KANSAS CITY—John W. Cain, 66, vice president and general manager of southwestern operations for the International Milling Co. at Kansas City, died Nov. 2 after suffering a heart attack at his home.

A member of a milling family long prominent in the Southwest, Mr. Cain was connected with the Midland Flour Milling Co. which was started in 1917 by Shane Bros. of Philadelphia. At the time of his death Mr. Cain was also a member of the board of directors of International, which in 1948 acquired the Midland property.

Mr. Cain's son, John W. Cain, Jr., is superintendent of the bulk storage plant of the Larabee Flour Mills Co., Kansas City, and a nephew, Douglas Cain, Jr., is manager of the International mill at Newton, Kansas. Besides his son, his widow and a daughter also survive.



GREETINGS — Shown greeting each other in the U.S., following their return from the World Poultry Congress in Edinburgh, Scotland, are J. D. Sykes, left, vice president, Ralston Purina Co., St. Louis, and Charles L. Davidson, president, Stone Mountain Grit Co. The picture was taken in Georgia, where Mr. Sykes visited the Stone Mountain company at Lithonia and Atlanta, where he made the acquaintance of his new grandson, born recently to his son and daughter-in-law, Mr. and Mrs. Doug Sykes.

UNCLE TOM'S FEED FABLES

I was coolin' my heels down at the elevator the other day and gettin' acquainted with the young fella that just took over as manager . . . and old man Fitch came in. I hid behind the newspaper cause I didn't feel like arguin' politics. He's about as uncouth an old cuss as you'll ever see and I knew he'd be spoilin' for a fight.

Well, sir, he got it from this here young fella who was tryin' to get the markets off the radio, and he finally told him he didn't have time to waste arguin', and he was a little rough about it, too.

When the old man left, Frank (that's the new manager) says . . . "Who is that old fool," and I says "Oh, nobody much, just the president of the bank that owns this elevator."

That just about floored him and I really felt kind-of-sorry. But I let him stew in his own juice for a while, cause he'd been sorta cocky.

But pretty soon we ambled down the street for a cup of coffee and Frank says, "What in the world am I goin' to do?" And I said, "Well, I'm going to tell you somethin'. Don't worry about old man Fitch. I was just kiddin' about him being president of the bank. He's just an old pest and it's a good thing you put him in his place but you didn't know that! He might have been the president—and you might have been lookin' for a new job next week."

Well, sir, it sure has made a difference in Frank. He's one of the nicest young fellas you'll ever meet now and he's never too busy any more to be nice to whoever comes in.

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ENERGEE PULVERIZED OATS
MIXERS' PULVERIZED OATS
MIXERS' COARSE GROUND WHITE OATS
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Election Outcome Indicates No Drastic Farm Law Changes

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON — Now that the election is history, there are indications that the 84th Congress will make no major changes in the farm law. In fact, the Democratic achievements were somewhat less than had been anticipated and certainly disclosed no broad farm revolt against the farm program of Ezra Taft Benson, secretary of agriculture.

The fact that the Republican lines generally held in the Farm Belt probably should be chalked up as a Benson endorsement. With the Democrats having a good working majority in the House, it appears that Benson policies will be under sharp scrutiny by that chamber.

However, any major attacks on the Benson program probably would be directed against changes he plans for cotton and cottonseed price support or acreage controls on that commodity.

The House Agriculture Committee is dominated by Southern tobacco-cotton farm area representation, and it may not search too deeply into farm legislation if it can obtain an easing of cotton acreage allotments for the next crop.

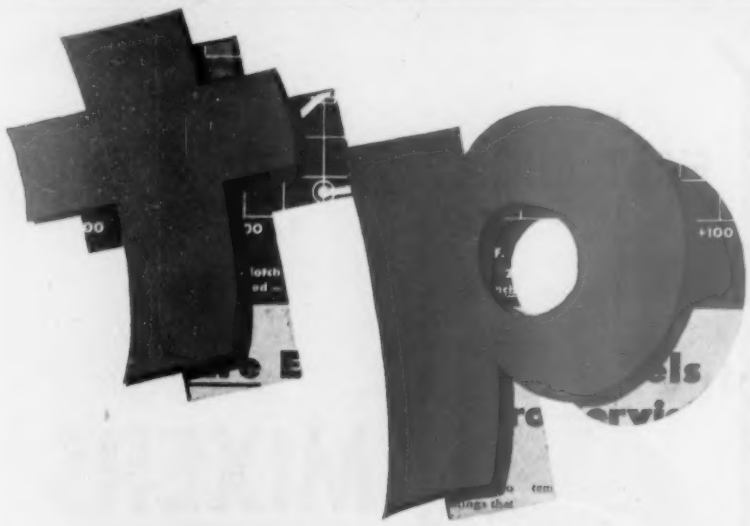
Most observers here now see little chance for any major shift in farm policies as set forth by Mr. Benson.

There is little reason to expect any major farm policy change, these observers declare. Opposition congressional committees undoubtedly will challenge administrative decisions by Mr. Benson throughout the life of the 84th Congress but there is no sign that the composition of that Congress will create a working force to reverse the responsibilities.

At present, it seems more likely than ever that Mr. Benson will come forward with his plan to lower the price supports for oats, barley, rye and grain sorghums to not more than 65% of parity to cushion the effect on dairy and poultrymen of the sagging feed-relationships.

Democratic National Committee officials tried hard to drum up enthusiasm on their farm victory but the best they could produce was a pair of House Democratic victories in Missouri and one in Minnesota which they attributed to the Benson program.

On balance, the election is seen as a slow-down of administrative action at USDA, but Mr. Benson seems to have come out better than most forecasters had indicated if the farm vote is to be taken as an index.



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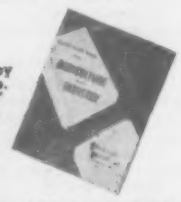

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FDA APPROVES

(Continued from page 1)

evidence attached thereto, as noted above.

FDA officials said the grant of authority also involves the requirement that in the use of product in cattle fattening rations there must be compliance with all of the use directions developed by Iowa State College and compliance in formulation and mixing of the product in the feed.

It is understood here that the Lilly company has already proceeded in its marketing plans for this product and has notified FDA that it is prepared to instruct all feed manufacturers who intend to use the product of their responsibilities and the requirements for application to FDA before actually incorporating the pre-mix in their cattle feeds.

Feed Firm Must Apply

FDA officials say that under the new provisions of the drug section of the Food, Drug and Cosmetic Act, a feed manufacturer who plans to use this product must file an application for use in duplicate with FDA.

That is, a feed manufacturer is required to file a new drug application supplemental to the Lilly company's effective new drug application.

The application must contain a full report of all evidence of harmlessness to both animals and ultimate consumers of products of the animals, and in this instance the feed manufacturer may incorporate in his application the scientific data already obtained by Iowa State College.

In addition to that information, the feed manufacturer, in his application, must itemize all components of the cattle feed in which this drug is planned to be used, as well as the amount of each component contained in the proposed feed.

Further, FDA requires that the feed manufacturer's application for authority to use this product must contain a complete report on the method of mixing the manufacturer will use to show the controls over desired distribution of the product in the feed.

Submit Label

Another important requirement for FDA's action is the inclusion of the label proposed to be used on the feed where stilbestrol is a component.

Before shipment of the premix can be made to the feed manufacturer, all required forms must be completed, and orders will be shipped as new drug applications become effective.

As noted above, it is learned that the Lilly company is prepared to supply FDA application forms to interested feed manufacturers and to instruct them in proper completion of these forms.

FDA officials say that in the normal course of events, if the forms are fully and properly executed in every respect, a grant of authority to use the stilbestrol pre-mix will be available within 10 days of filing.

Under an application for a patent by the Iowa State College Research Foundation, the Lilly company is licensed to make and market the stilbestrol pre-mix for cattle feed.

Research Results

As pointed out recently by Dr. Wise Burroughs of Iowa State College, the Iowa experiments showed that stilbestrol, when added to cattle supplements, increases liveweight gains markedly and decreases feed costs appreciably.

"Liveweight gains appear to be stimulated on all types of cattle rations," Dr. Burroughs said. "However, the greatest stimulation is noted on the better rations containing generous amounts of grains. Gains have been stimulated as much as 37% on high-corn fattening rations, which amounts to as much as ¾ lb. additional gain per steer per day. On high roughage rations where cattle are being wintered to gain moderately, stilbestrol stimulates gains by approximately 10 to 15%. Both heifers and steers respond to stilbestrol feeding; however, somewhat more response is noted in the case of steers.

"Feed costs on all types of cattle rations and with different kinds of cattle are reduced from 10 to 20%. This represents currently a saving of 2 to 4¢ per pound of gain. Stimulation in feed consumption amounts to about 5% on the average."

Based upon all experiments conducted to date, the most desirable level for stilbestrol feeding appears to be 10 milligrams per animal daily, Dr. Burroughs said.

He goes on to note that in the use of stilbestrol in cattle feeds, there is an absence of undesirable side effects, with no signs of restlessness, riding, udder development and high tailheads. Also, there has been little or no alteration observed in carcass quality with the feeding method of administering stilbestrol.

Finally, Dr. Burroughs said, the meat tissues from stilbestrol-fed cattle appear to be free of harmful residues of stilbestrol. This same situation is also true of the offal organs of cattle.

Bob Fisher

BURRUS APPOINTMENT — Bob Fisher has been appointed territory manager for Texo Feeds in the Abilene, Texas, area, according to Vic Holt, district sales manager, Burrus Feed Mills, Ft. Worth. Mr. Fisher is a 1950 agriculture graduate of Oklahoma A & M College, where he was an active member of the National Poultry Club. He formerly was with Seymour Packing Co. as broiler supervisor, and prior to joining Burrus he was with Swift & Co. as broiler supervisor and chick salesman. He and his family will reside in Cisco, Texas.

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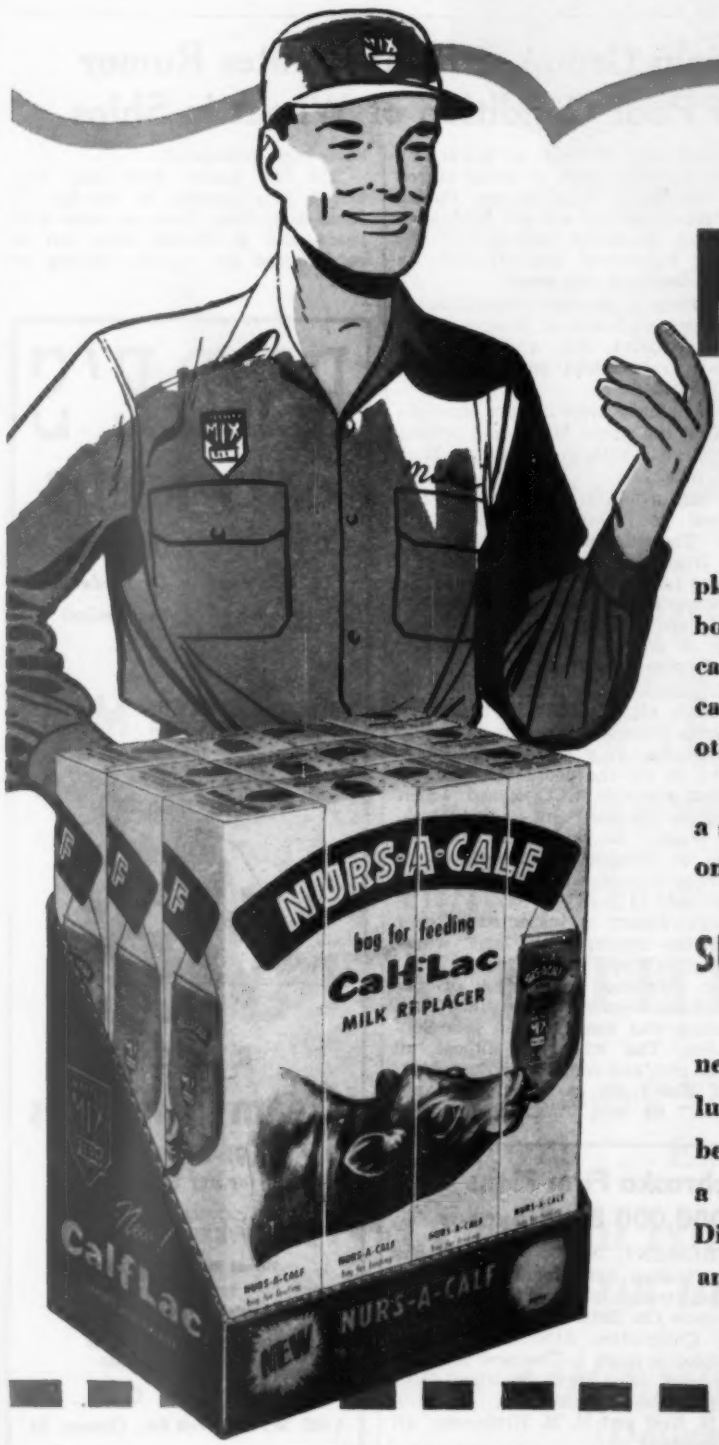

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HAVOC BY HAZEL—The broiler producers in the Delmarva Peninsula suffered losses estimated at between $15 and $20 million when Hurricane Hazel swept the region Oct. 15. Pictured above is the wreckage of a broiler house that is typical of the damage done. Estimates place the loss of poultry houses at 25 to 30% of all such structures in the Laurel, Del.-Salisbury, Md., area.

Grain Group Official Refutes Rumor Of Poor Condition of Wheat in Ships

SPOKANE, WASH. — Rumors about poor condition of wheat stored in "mothball" ships in the Pacific Northwest simply are not true, Pete Stallcop, executive secretary of the Pacific Northwest Grain Dealers Assn., declared this week.

"I made a personal inspection of the ships anchored at Tongue Point (near Astoria), Ore., and found the wheat in excellent condition," Mr. Stallcop said.

"There have been rumors circulating that the wheat is wet and rotting and overrun with grain insects. That isn't true.

"I can understand how some of the rumors got started, however," he said. "The ships are painted rust red, and from the shore they look like rusting hulks—but they are not. The Maritime Commission says it can put each ship to sea six and a half days after it is ordered recommissioned and I believe they can."

Mr. Stallcop said the wheat is stored in all five holds of 10,000-ton capacity Liberty ships, but each ship is loaded to only ⅝ of capacity.

"All in all, the people have a $75 million stake in CCC owned wheat stored at Tongue Point and at Olympia, Wash.," he said. "There are 87 ships at Tongue Point and 43 at Olympia stored with 29,800,000 bu. of wheat.

"The wheat is inspected oftener than the average 'on land' warehouseman would inspect his grain."

Mr. Stallcop said some of the wheat has been in storage since May. Loading was completed in late September. The wheat is almost all mixed club and common white wheat.

"I didn't see a grain bug anywhere," he said. "All of the ships have been fumigated.

"No one knows how long that wheat may remain in storage. It could stay two, three or even four years—but it should come out in good shape for export, milling or feed."

Nebraska Firm Plans 1,000,000 Bu. Elevator

FREMONT, NEB. — Ground has been broken here for the 1-million bushel storage plant of the Fremont Elevator Co. Estimated cost is $600,000. Completion date for the new elevator is April 1. The new corporation has been organized by Paul Christensen, president, A. W. Hill, W. N. Neff and H. M. Krupinsky, all of Fremont.

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Please send me complete information about Borden's Supplements and services.

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3 Add still another department to your business with the entire facilities of the Borden advertising staff. Hard-hitting, *effective*, custom-built dealer aids are created and produced to help merchandise and sell your feed in every way. Leaflets, pennants, posters, seals, direct mail pieces, metal signs, calendars, radio and TV spot announcements, newspaper ad mats—all designed for you by advertising specialists, all personalized with your name to *sell your feed*. Your dealers will welcome these advertising aids, your business will profit from them.

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4 Your biggest competitors still are poor feeding and management practices. To help you meet these serious competitors "head-on," the Borden Company has prepared a series of highly informative and entertaining poultry, hog and dairy strip films with recorded narrations to *show* and *tell* your customers how to avoid these costly feeding and management practices. What's more . . . the narrations are recorded *especially for you* to carry a strong commercial message *for your feeds!* Any one of them . . . or all . . . can be made available to you for the asking.

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Court Rules on Futures Contracts

NEW YORK—The U.S. Court of Appeals for the Second Circuit has upheld the Commissioner of Internal Revenue in his contention that dealings in commodity futures contracts are hedges and not speculations, and that therefore the taxpayers' gains and losses were ordinary income and ordinary losses (the Corn Products Refining Co., petitioner, v. the Commissioner of Internal Revenue, respondent, decided on Aug. 25, 1954).

From about 1940 to 1946 the Commissioner of Internal Revenue successfully contended in a series of cases that dealings in commodity futures contracts gave rise to capital, rather than ordinary losses. Thereafter the Commissioner changed his ruling, with which the court concurred.

As stated by the court, items covered by hedging "cannot reasonably be separated from the inventory items and the cost from such operations would necessarily be entered in the books of account of the business as part of cost of goods sold."

And while the taxpayer was protected only against increases in commodity prices and did not have the complete insurance of the "true hedge," for practical purposes the element of risk in the performance of its sales contracts was reduced.

Nevada Joins USDA Drouth Hay Program

WASHINGTON—The U.S. Department of Agriculture has announced that an emergency hay program contract has been signed with the state of Nevada, making it possible for farmers in Nevada's 10 drouth-designated counties to obtain hay at reduced transportation rates.

The initial allocation was $500,000, and an immediate initial disbursement of $125,000 is being made in order that the program can get under way without delay.

Sixteen states now are participating in the program, under terms of which USDA pays up to $10 per ton (or not more than half the actual average transportation rate, whichever is smaller) to bring hay into drouth designated areas. These states include Texas, Colorado, Wyoming, Oklahoma, New Mexico, Kansas, Missouri, Arkansas, Mississippi, South Carolina, Alabama, Georgia, Tennessee, North Carolina, Louisiana and Nevada.

A. W. Lohry, Iowa Feed Company President, Dies

SIOUX CITY, IOWA—Albert W. Lohry, 59, president of the Kay-Dee Feed Co., Sioux City, Iowa, died recently while on a trip to Sloan, Iowa.

Mr. Lohry purchased the Kay-Dee company in 1929 when he came to Sioux City. The plant was then located at 201 Iowa St. In 1935 he moved the plant to 1825 Grand Ave. where it is still located.

Surviving are his widow, Belle; three sons, Royal, William and Kermit, all of Sioux City; two brothers at Dearborn, Mich., and five grandchildren.

Missouri Feed Mill Fire Causes Loss of $150,000

KANSAS CITY—A feed mill belonging to C. N. Rose, and situated near Zarah, in Johnson County, burned with the loss being estimated at about $150,000. The building, milling equipment and a considerably quantity of cattle feed burned, said Mr. Rose.

About 200 head of cattle, owned by Mr. Rose, and which were housed in a pen adjacent to the feed mill, were not injured by the blaze.

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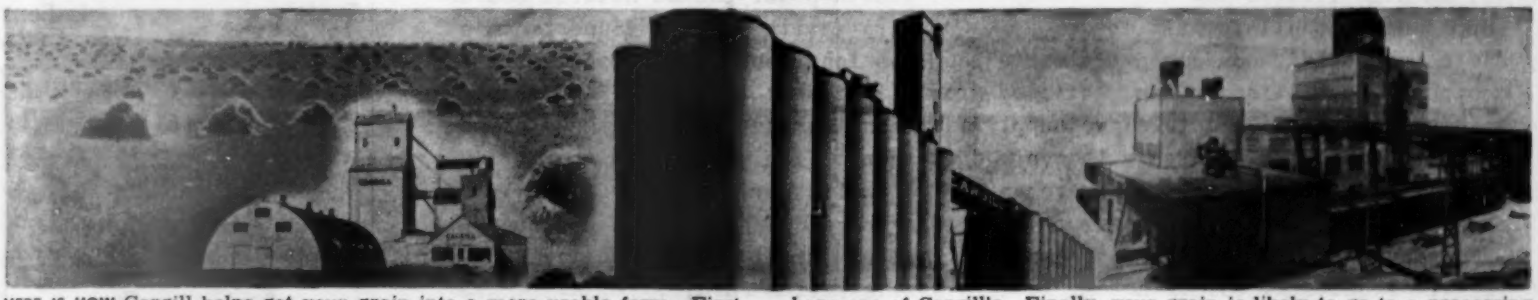
BETTER MARKETS because 8 different farm products are sold in Nutrena Dog Food.

BETTER MARKETS for your flaxseed because Cargill creatively processes and sells Linseed Oil.

BETTER MARKETS for your flax crop when Cargill is processing and selling the linseed meal.

BETTER MARKETS for your bean crop because Cargill is processing and improving the oil.

BETTER MARKETS & PRODUCTS for you because of high-quality soybean meal Cargill is processing.



HERE IS HOW Cargill helps get your grain into a more usable form. First, your grain goes to a country elevator—perhaps one of Cargill's. Then, it is shipped (with your neighbor's grain) to a terminal elevator—again perhaps one of Cargill's. Finally, your grain is likely to go to a processing plant, where more than 75% of all farm products end up to be made into things to be eaten or used.

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Russell-Miller Officers and Executives Named

MINNEAPOLIS — The annual meeting of stockholders of the Russell-Miller Milling Co. was held Oct. 20 at the company's headquarters here, with these members elected to the board of directors: Truman J. Beggs, W. Leonard Brisley, Edward S. Decker, Richard J. Harrington, William R. Heegaard, F. Peavey Heffelfinger, Totton P. Heffelfinger, George W. P. Heffelfinger, Arthur R. Helm, Albert C. Remele, William M. Steinke, Betty J. Sullivan, James B. Templeton.

A dividend of $2.25 per share was declared on the outstanding preferred capital stock payable Jan. 3, 1955, to holders of record Dec. 15.

At a subsequent meeting Oct. 22, the board of directors elected officers of the company, including George W. P. Heffelfinger, president; W. M. Steinke, executive vice president; W. L. Brisley, vice president in charge of terminal merchandising and general manager of the Electric Steel Elevator division; R. S. Owens, vice president and assistant in charge of terminal merchandising and general manager of the Occident Terminal division; A. R. Helm, vice president; E. S. Decker, secretary and assistant treasurer; M. A. Lea, controller, treasurer and assistant secretary; R. J. Lanches, assistant secretary, and W. A. Ankeny, assistant treasurer.

In the milling division are W. R. Heegaard, vice president and general sales manager; Dr. B. J. Sullivan, vice president and director of research; R. J. Harrington, vice president, Buffalo mill; O. F. Wilke, vice president and general superintendent of flour mills, and W. E. Jernberg, assistant secretary, wheat department.

In the Occident elevator division are T. J. Beggs, vice president and general manager; S. M. Thiele, assistant secretary.

Electric Steel Elevator division: D. R. Sander, assistant secretary; W. E. Arneson, assistant secretary.

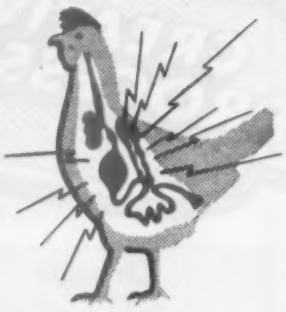
The American Elevator and Grain division has B. B. Davis as assistant secretary and general manager.

The following divisional officers were appointed by Geo. W. P. Heffelfinger: E. S. Decker, vice president, credits; T. S. Paulsen, vice president, purchasing; milling division — B. F. Morris, vice president, bulk sales; J. H. Bosard, vice president, family flour sales; W. J. deWinter, Jr., vice president, export sales; F. W. Hayes, vice president, production; E. E. Powers, vice president, Alton mill, and R. S. Hjelmseth, vice president, Dallas mill.

MONTANA OPEN HOUSE

WHITEHALL, MONT.—George H. Christensen, who recently established the Williams Feed Store here, held an open house.

AN OPEN LETTER
TO FORMULA FEED MANUFACTURERS



Nature STILL has a lot to do with growth!

This is the age of high speed both in industry and agriculture. In the automotive field, engineers are constantly working to give automobile engines greater horsepower and speed. And the fuel people keep right up with these new engine designs, adjusting octane ratings and pouring in synthetic additives . . . to help produce the improved performance and lower cost for which the new engines are designed.

In your own field . . . the manufacture of formula feeds . . . you satisfy the demands of your customers by adjusting and bolstering your formulae with many nutritional stimulants suggested in recent years as conducive to high-speed growth and better conversion ratios.

But how safe is it to tinker with Nature? Can we do so without creating what we at Amburgo call "High Speed Exhaustion" . . . as the result of undue stress and strain on an over-stimulated metabolism? Nature's carburetor, the animal digestive system, cannot be altered like the automobile engine . . . but it can be influenced for better, more efficient utilization of feedstuffs.

Amburgo has always believed that Nature can best provide Nutritional elements most harmonious to the animal digestive system. That is precisely why Amburgo created the highly acceptable, growth-power-packed natural source supplement for all formula feeds . . . Supertrate with UNIFAC. Supertrate's basic ingredient, condensed fish solubles, has long been known as an important source of identified and unidentified growth factors. And in UNIFAC (meaning Unidentified Growth Factors) we supply additional amounts of the three prime factors considered necessary to every diet today: Fish, Grass and Whey. It's Amburgo's approach to improvement of metabolic performance without stress. Achieving growth-power records of average weights like 3.61 lbs. on 2.83 conversion ratios at 10½ weeks is a typical result of such performance. (Latest results at Golden Acres, Amburgo Demonstration Farm) . . . so may we suggest Nature's way . . . Supertrate with Unifac.

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a highly concentrated blend providing multiple natural sources of Fish, Grass and Whey factors, as well as other unidentified growth sources.

Each 50 lb. bag contains:

Over 20 lbs. of Dried Fish Solubles, derived from 40 lbs. of Condensed Fish Solubles by a Moisture-Extraction process (Pat. Pending)

and

- Extracted Penicillin Mycelia Meal
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PAY-U MIXING MINERALS are research-tested . . . scientifically balanced . . . by the world's largest mineral feed manufacturer.

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USDA Research Project Aims At Better Pastures in West

WASHINGTON — Establishment of a new research project to help ranchers improve their pastures and ranges in the arid and subhumid regions of the West, from New Mexico to North Dakota, has been announced by the U.S. Department of Agriculture.

In making the announcement at the Jornado Range Field Day, Las Cruces, N.M., Dr. A. H. Moseman, director of crops research for the department's Agricultural Research Service, said: "A major part of this research effort will be devoted to investigations of range reseeding, fertilization and management formerly conducted by the U.S. Forest Service. These studies became the responsibility of the Agricultural Research Service as a result of the recent USDA reorganization."

Dr. R. E. Wagner of the Field Crops Research Branch, ARS, has been named leader of the new project, with headquarters at the Department's Plant Industry Station, Beltsville, Md. A. C. Hull, formerly of the Forest Service, has been appointed ARS regional coordinator of range reseeding and fertilization phases of the project. He maintains headquarters at the Utah Agricultural Experiment Station, Logan, Utah.

Dr. Wagner has been engaged in pasture establishment and management research for USDA at Beltsville since 1945. His most recent post was an assistant to M. A. Hein, project leader for pasture and range research in the humid region. Before coming to Beltsville, Dr. Wagner was assigned to the Fort Hays Branch Experiment Station, Hays, Kansas, where he was concerned primarily with cooperative state-federal range investigations.

Mr. Hull has had wide experience in range reseeding research. In addition to his regional coordinating and supervisory responsibilities he is in direct charge of certain USDA pasture and range studies in northern Utah, southern Idaho, and western Wyoming.

All USDA grazing management research in the Great Plains area and in the Jornado Experimental Range, Las Cruces, N.M., is included in the new project. The Great Plains work is centered at Woodward, Okla., Nunn, Colo.; Miles City, Mont. and Mandan, N.D.

E. H. McIlvain has recently been appointed superintendent of the USDA's Southern Great Plains Field Station at Woodward, succeeding D. A. Savage, deceased. Mr. McIlvain has conducted grazing management research on native and reseeded ranges at Woodward during ten of the past 14 years.

MEMPHIS EXCHANGE MEMBERS

MEMPHIS, TENN. — Three changes have been made in the membership roster of the Memphis Board of Trade, executive vice president Arthur A. Williams has announced. Charles Kittel of Bache & Co., Chicago, has been granted floor privileges. Roger Drackett has replaced Arnold E. Schneider as representative of the Drackett Co. of Cincinnati, and Donald Cogg has replaced J. D. Frants as representative of Iowa Soya Co., Inc., of Redfield, Iowa.

FACTS

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*The duplications of Feedstuffs circulation by any one competing publication among readers who *classify themselves* as feed manufacturers range from 10.7% to 38.7%. To advertisers, this means that of every 10 Feedstuffs readers who classify themselves as feed manufacturers only 1 to 4 receive any other one publication.

GET THE DETAILS: This is but one of the readership preference facts confirmed by an independent comprehensive study of businesspapers serving the feed industry. Additional detailed information is available. Write—wire—phone the Feedstuffs' office nearest you.

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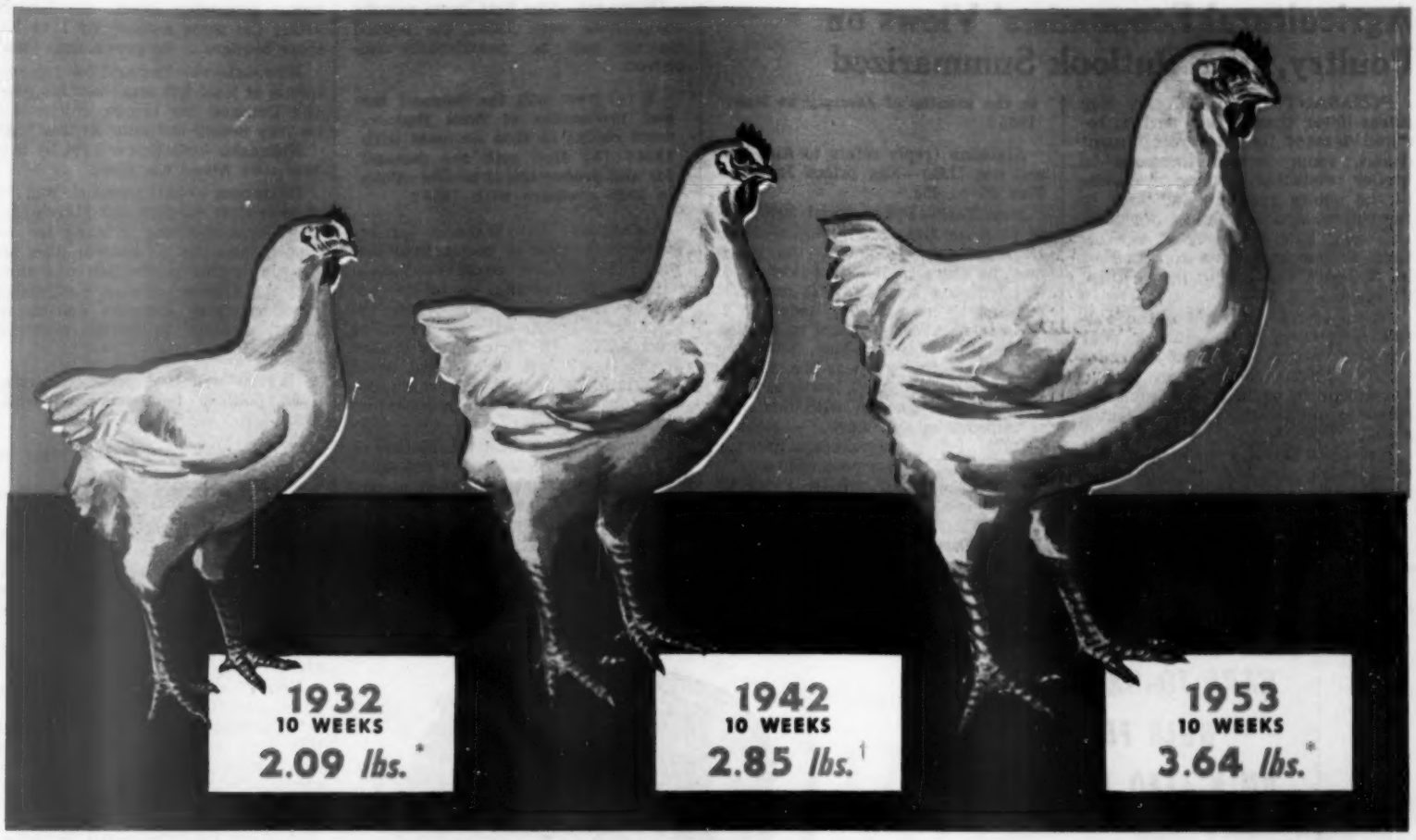

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The well-fed broiler of a few years ago did well to reach 2.09 lbs. in 10 weeks — a gain of approximately .029 lbs. per day. Now a broiler in 10 weeks reaches 3.64 lbs. — a gain of .052 lbs. per day.

This remarkable growth increase means that modern broilers must convert *79% more phosphorus per day* to their bodily needs than in 1932

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This has increased the need for an efficient source of phosphorus . . . for phosphorus must enter into the development of *every cell*, whether muscle, feather, bone or gland. That's why even a moderate deficiency in effective phosphorus can limit growth possibilities of other nutrients.

To meet this modern need for a harder working phosphate, International has developed 20/FOS — a high-potency, high-purity phosphate packed with extra meat-building power.

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As a result, 20/FOS is dynamic. It provides 2 to 10 times more usable phosphorus than unprocessed phosphates . . . delivers 400 lbs. of non-caking phosphorus per ton. Yet, 20/FOS is economical . . . costs you less in terms of practical results.

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Agricultural Economists' Views on Poultry, Egg Outlook Summarized

PLEASANT HILL, MO. — Egg prices lower than a year earlier, reduced demand for flock replacement chicks, some further increases in broiler production — these are some of the points generally indicated in the poultry and egg outlook for 1955, according to a summary of agricultural economists' views compiled by M. R. Irwin, Colonial Poultry Farms, Pleasant Hill, Mo.

In an effort to estimate the outlook for poultry and eggs in the year ahead in various sections of the country, Mr. Irwin sent questions late in September to agricultural economics departments of colleges in selected states.

Here is a list of some of the questions and a summary of replies for certain states:

1. What do you estimate egg prices will average in your state in the months of January to May, 1955?

Alabama (reply refers to Alabama and not U.S.)—Egg prices January-May 40 to 45¢.

New York—Prices about 20% lower than for the same period of 1954. During January-March, the price may be more than 20% below 1954, while during April-May, it may not average as low as 20% under 1954.

Kansas—Average prices to Kansas farmers for January-May, 1954, for current receipt eggs was 33¢. Expect prices to average 25% lower at least through first quarter, with tendency to improve late in April.

Iowa—Prices may average about a fourth lower than a year earlier.

Missouri—Prices will be about 12 to 15% less than in the same period of 1954.

Nebraska—10 to 15¢ below 1954.

Oklahoma—The first three months comparable with 1954; the second quarter will be considerably improved.

2. (a) How will the demand for and production of flock replacement chicks in 1955 compare with 1954? (b) How will the demand for and production of broiler chicks in 1955 compare with 1954?

Alabama — (a) Demand for replacements equal or better than last year. (b) Broiler chick production will continue normal rapid growth.

New York — (a) Demand for replacement stock will be down as much as 7%. (b) Demand for broiler chicks should not be as great as in 1954, but broiler producers will probably continue to increase numbers by a small amount.

Kansas—(a) Average reduction of 8 to 10% in replacement chicks is likely. (b) Expect continued strong demand for broiler chicks with output near record levels for 1954.

Iowa — (a) Demand for replacements somewhat lower. (b) Expect about the same number or 1 to 2% more broilers to be grown next year.

Missouri—(a) Demand for replacements at least 5% less than this year. (b) Demand for broiler chicks will be very nearly the same as this year.

Nebraska—(a) Below 1954 by 5 to 10%. (b) About the same.

Oklahoma — (a) Demand will be slow in first quarter, but March-May should show strong demand for replacements. (b) At present does not appear broiler production will show any appreciable increase. Established producers may increase placements in an attempt to reduce overhead costs 5-10%.

3. How will 1955 prices of grain and poultry feed compare with 1954?

Alabama — About the same or slightly lower.

New York—Somewhat lower than in 1954.

Kansas — Slightly higher during first half of year.

Iowa—Corn about 10¢ bu. higher, protein feeds slightly cheaper than year ago and considerably below last spring.

Missouri — Grain prices a little higher next year.

Nebraska — About the same or down slightly.

Oklahoma—Considerably higher in this area as Oklahoma is a feed deficit area generally—10 to 15% increase.

4. In your opinion, are low market prices for hens (fowl) likely to continue for some time in future?

Alabama—Prices at low point now.

New York—Will continue to be low, but this does not mean we will continue with 8-12¢ market for hens. Prices will rise seasonally after fall dumping period.

Kansas — Continued weakness in October with gradual seasonal strengthening of heavy hen prices in next five months; light hens probably won't strengthen much until early spring.

Missouri—Long run picture doesn't indicate fowl prices will show lows of past summer.

Nebraska—Prices expected to continue low for some time.

Oklahoma—Expect prices to continue low, with continued flock liquidations at present low farm prices for eggs.

BUYS MINNESOTA FEED STORE

FARMINGTON, MINN.—Gil Gilbertson has purchased the feed store formerly known as the General Mills Farm Service Store here and has renamed it Gil's Farm Service. Herb Brummond is the assistant manager.

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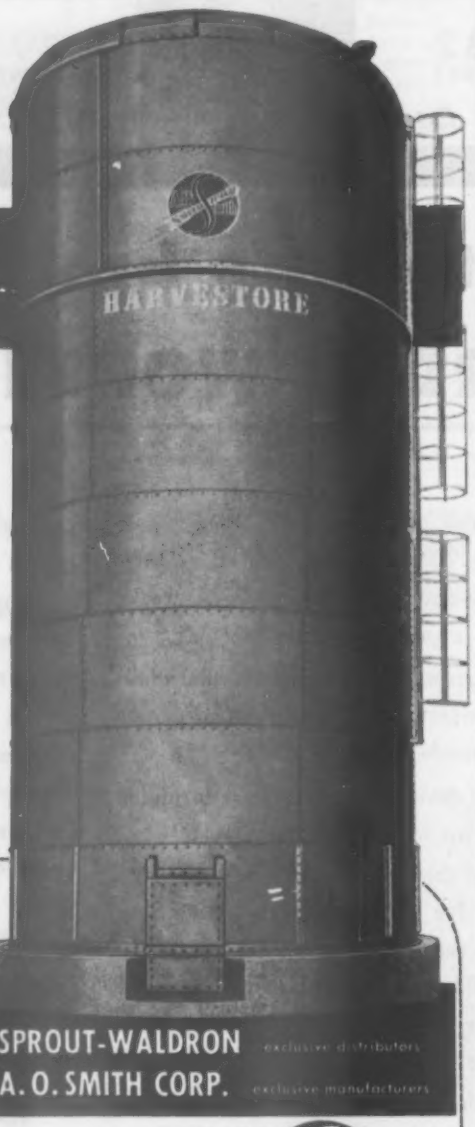

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"Before you go to any stabilized Vitamin A, make your own tests for stability and growth response and you'll see why there's a big swing to Pfizer vitamin A", says E. G. "Bud" Schmidt, Midwest Regional Manager, Pfizer Agricultural Sales.

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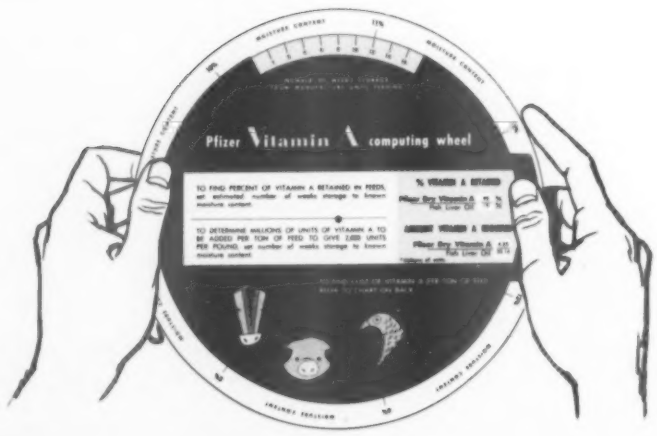

Manager, Pfizer Agricultural Division, says...

brands are switching Dry Vitamin A!"

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4-H CLUBBERS ENTERTAINED—A. H. Poppe, president, Bremco Alfalfa Mills, Inc., New Bremen, Ohio, was host to five 4-H Club members, who have done outstanding work in dairy herd projects in vocational agriculture classes of New Bremen High School, on a visit Oct. 11 to the International Dairy Exposition, the stockyards, the Board of Trade and other points of interest in Chicago. Shown in their visit to the Chicago office of Feedstuffs, the boys are, left to right, Ralph C. Quellhorst; Paul E. Mohrman; Kenneth A. Dicke; Earl L. Dicke; James H. Rempe; and Mr. Poppe.

Pfizer Official Gets U.S. Advertising Award

NEW YORK—Guy S. Saffold, advertising manager of the agricultural sales division, Chas. Pfizer & Co., Inc., has been honored with a Putman award citation for his leadership in organizing and promoting the $20,000 Pfizer national hog judging contest.

Cited with Mr. Saffold was Ed Thiele, account supervisor of the Leo Burnett Company, Inc., Chicago, the agency which handles Pfizer's agricultural advertising. The citations were presented at an award luncheon at the Belmont-Plaza Hotel.

ADM NAMES J. J. SELLNER

MINNEAPOLIS — The appointment of James J. Sellner as sales manager for the company's soya specialty products was announced by the Archer-Daniels-Midland Co., Minneapolis. He succeeds Wilfrid B. Cox who has resigned. Mr. Sellner was formerly assistant sales manager at the Pako Corp., Minneapolis.

Malcolm J. Goldie

APPOINTED—Gilbert C. Van Camp, president, Van Camp Sea Food Co., Inc., Terminal Island, Cal., has announced that Malcolm J. Goldie, formerly general manager of the Van Camp Laboratories division, has been made director of sales and advertising. Directly responsible to him are Clarence J. Harris, newly appointed to sales manager, and Robert G. Debnam who continues as advertising manager. Mr. Goldie was first employed by Van Camp in 1940 and has had experience in all phases of the firm's fishery operations.

Utah Feed Conference Days Changed to Feb. 1-2

LOGAN, UTAH — A change has been made in the dates of the sixth annual nutrition and production conference for feed dealers, sponsored by the Utah Feed Manufacturers & Dealers Assn., according to Lorin E. Harris, secretary. The conference will be Feb. 1-2 at Provo, Utah. It had originally been planned for Feb. 2-3.

200,650-BU. ELEVATOR

HUTCHINSON, KANSAS — The Farmers Co-Op Grain Co. has let a contract for a 200,650-bu. elevator to be erected at Abbyville, a small station near here. Howard Stultz, manager, said the contract price was $133,000. It is hoped to have the plant in operation early in 1955.

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Talks Cover Wide Range of Topics at Texas Conference

By MARTIN E. NEWELL
Feedstuffs Editorial Staff

COLLEGE STATION, TEXAS — The 1955 Texas Nutrition Conference set a new high in attendance and breadth of program. A total of 225 feed manufacturers and allied feed interests from Texas and many nearby states attended the sessions this year. They heard a program that ranged over nearly all phases of feed formulation. The latest developments in each field came in for discussion.

Beef Cattle

Appropriately enough for a Texas conference, the discussion started with beef cattle nutrition. W. M. Beeson, Purdue University, Lafayette, Ind. discussed the formulation of supplements that would permit the utilizing of low-quality roughages, a program initiated some years ago with the first addition of Purdue Cattle Supplement A. Dr. Beeson discussed the current version of the now celebrated supplement.

Commenting on the use of urea in formulas of this kind, he said that one of the key points is to remember that it contains no energy value and that when it is used to replace part of a protein supplement it is necessary to add equivalent amount of energy in the form of grain or molasses or some other high energy feed. A low energy material such as corn cobs will not do this job, he emphasized. For every pound of urea that is added to concentrate mixture to replace six pounds of soybean meal, it is necessary to add five to six pounds of an energy feed such as corn or molasses to make the substitution equal in nutritive value, he said. When properly used, a feeder can get equal results with urea replacing one-third or one-half of the protein. Tests at Purdue indicate that replacing as much as two-thirds or all of the protein with urea had some depressing effect on the rate of gain.

Dr. Beeson said that the sugar and ash content of molasses contributes effectively to the utilization of roughages as well as adding palatability to the diet. When fed in small amounts (1½ lb. per day) molasses has about the same energy value as corn, but at higher levels (4 to 5 lb. daily) this value is reduced to 65 to 75% of corn, he said.

The speaker also observed that trace minerals probably are needed in Purdue-type formulas if dicalcium phosphate is substituted for bonemeal. He said that alfalfa meal contains some unknown factor or factors which improve the utilization of roughages and significantly increase the growth rate of steers. Not only does the alfalfa have carotene and protein values, but equally important are inorganic elements and unidentified factors necessary for the most efficient utilization of roughages. The new formula for Supplement A contains 14% dehydrated alfalfa meal.

Other Additions Tried

Dr. Beeson said that so far additions of distillers solubles, fish meal, vitamin B_{12}, fish solubles and dried brewers yeast did not improve rate of gain of steers on Supplement A. In two tests, the use of active cell yeast showed some improvement, and a test on Torula yeast at Iowa showed some promise. The picture with regard to antibiotics is not quite clear at present, he said. It appears that antibiotics may be of some value on poor roughage diets but do not seem to be beneficial on high energy diets. Likewise, feeding of sulphur shows beneficial effects on complete urea diets, but researchers have not been able to stimulate growth by adding

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sulphur to natural feed formulas.

Dr. Beeson discussed some of the current aspects of feeding diethyl stilbesterol, a practice not yet authorized by the Food & Drug Administration. Rate of growth and feed efficiency can be improved, he said, but in many implanting tests at Purdue unfavorable side reactions were apparent. He pointed out that there are other estrogens which should be studied and which might produce good results without the side effects.

H. O. Kunkel of Texas A. & M. College, reviewed the current status of antibiotic feeding to ruminants. Several experimental results suggest that the growth promoting value of antibiotics in the diet of calves is greater during very early life than during late calfhood, he pointed out. He also pointed out the evidence of improvement in rate of gain of fattening lambs and beef cattle when fed diets high in roughages. In some lamb feeding trials in Texas, it was indicated that the antibiotic may have value over and above an increased rate of gain in helping to control digestive disorders.

Broiler Nutrition

Discussing recent developments in broiler nutrition, G. F. Combs of the poultry department, University of Maryland made the following observations:

The protein-energy ratio of broiler feeds is very important. Too much of either will reduce feed efficiency. A ratio of 10 calories per gram of protein appears to be effective.

This fact probably accounts for varying results in studies where stabilized animal fats have been added to practical type-high energy broiler rations. It may be necessary to increase the protein levels slightly in proportion to the increase in energy content of the ration in order to realize the full value of added fats in broiler rations. Choline also should be considered when adding fats.

Results obtained at Maryland indicate the addition of one pound of Dl-methionine per ton of broiler feed improves both the growth rate and feed efficiency. It may be that low levels of "free" methionine may have some special value in broiler feeds.

High level antibiotic feeding appears to justify the added cost during those periods of the year when respiratory diseases are prevalent. Results at Maryland indicate that the use of a combination of an arsenical and an antibiotic is sound under practical conditions. Rations complete in all nutrients permit greater responses from arsanilic acid in the presence of antibiotic than to incomplete rations.

Unknown Factors

Studies with unidentified growth factor supplements clearly show that different unknown factors are required for optimum results. One of these is generally termed the "fish factor," while the other is called the "whey factor." Either of these may limit results unless adequate sources are provided in the ration. In addition, studies with purified diets indicate that a third factor is present in alfalfa meal, which has not always been found to be critical in practical corn-soybean meal type rations.

Anti-oxidants have a sparing effect on carotene and studies have shown that the addition of DPPD increased the pigmentation of broilers almost 100%. This makes practical the use

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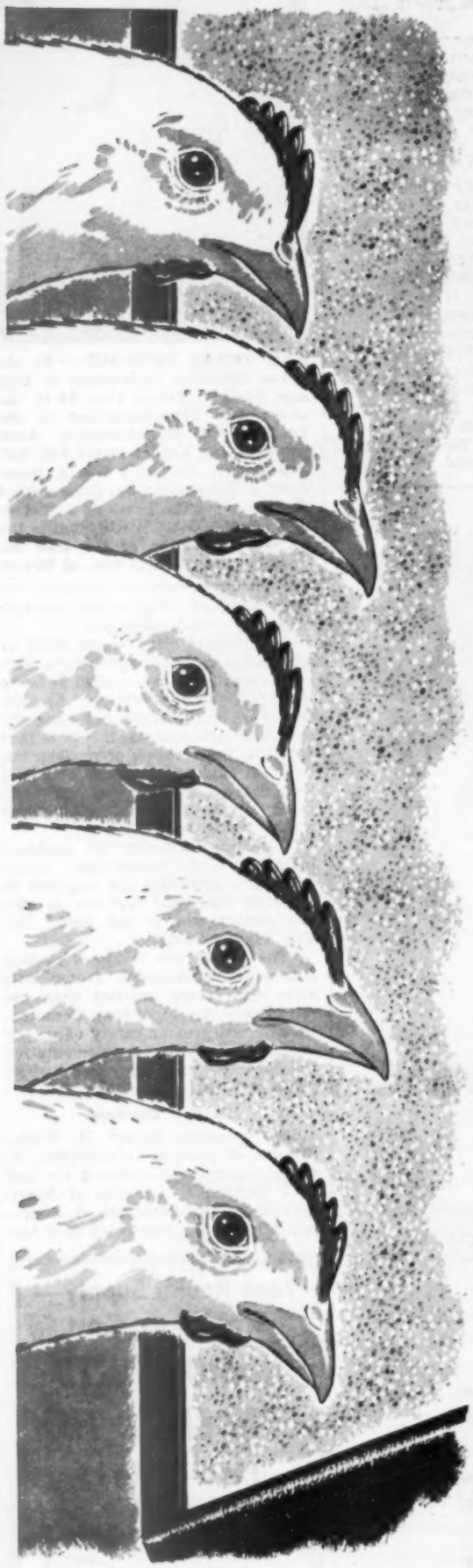

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of one-half milo in place of corn with the use of DPPD.

Dr. Combs said that the raising of a 3-lb. broiler on 5 lb. of feed is an attainable goal. It may not now be practical because of costs but it is physiologically possible.

A further discussion of unknown growth factors for the chick was presented by A. A. Camp, superintendent of the Gonzales substation, Texas A. & M. College. He reported a number of experiments identifying the presence and importance of unknown factors in fish solubles and dried whey. There is also evidence of the presence of the fish factor in an antibiotic fermentation residue. Other studies show that the unidentified "whey factor" was present in dried whey, fermented whey and hydrolyzed whey. There was some evidence that the fermented whey contained some of the "fish factor" also.

"The value of unidentified growth factors is not the only controversy," Mr. Camp said. "At least two of the vitamins known to be required by the growing chick have been the subject of much concern lately—Vitamin A and choline."

Some nutritionists contend that an ample quantity of Vitamin A for the chick is present in natural feedstuffs, such as yellow corn and alfalfa meal. Also, many feel that a sufficient quantity of choline for the chick is present in natural feedstuffs. However, investigations at the Gonzales station indicate that these suppositions are not true as better growth was attained with additives of these factors. It was also indicated that, as more production stress is placed on the birds by a lack of feeder space, or watering space, poor ventilation, etc., the greater the value received from the addition of these two vitamins to the feed.

Studies at the Gonzales location also indicated that feather meal and processed chicken offal appear to contain an unidentified growth factor for the chick.

Mr. Camp also reported that his trials show that cottonseed meal could be added to broiler rations up to 15% without affecting the growth rate and feed efficiency, provided the meal was of the low gossypol type.

Technique Varied

There are very many difficulties in studying the responses to unidentified growth factors, R. F. Van Poucke, manager of the feed products development department, Western Condensing Co., Appleton, Wis. reported. Nevertheless, it is possible to get consistent responses in such studies, he said and presented a wide variety of evidence of this fact. He pointed out seven factors which tend to cause complications in studies of unknowns, and said that research workers are striving to reduce these problems as much as possible by the development of special technique, most of which involves the creation of non-practical conditions.

TWO TEXAS FEEDMEN — At the Texas Nutrition Conference at College Station, Texas, Oct. 14-15 the above two representatives of the Texas Feed Manufacturers Assn. were present, Luther Pharr, left, Ralston Purina Co., Fort Worth, president of the association, gave a word of welcome at the Texas A. & M. College meeting. Shown with him is the secretary-treasurer of the feed association, W. Bassett Orr, of Bryan.

"We might often frown upon or discredit a piece of work where such conditions have been applied as being unrealistic and impractical," he said. "I feel we should remember, however, that it is techniques of this type that speed up the progress of work in the field of unidentified factors and hasten the day when we can make more practical use of ingredient sources of these factors.

"The preponderance of evidence indicates that unidentified factor carrying ingredients are required in practical formulas that are to give top performance in the field," Mr. Van Poucke said.

"The use of low levels of several sources of unidentified factor is a safer and better practice than the use of only one ingredient. Combinations afford greater safety of proper unidentified factor supplementation than does the use of any one produce alone at a high level."

Broiler Diseases

Two speakers—Robert H. White-Stevens, of Lederle Laboratories Division, American Cyanamid Co. and E. I. Robertson, Director of Nutrition, John W. Eshelman & Sons—pointed out the important role now

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Phones: LD 64 and 4401

"MISTER ALFALFA"

LET'S SOUND OUT VITAMIN K

Vitamin K is a rather unique member of the vitamin family in that it appears to be required for a specific single mechanism in the body—that is blood clotting. Vitamin K deficiency is measured by determining the blood clotting or prothrombin time of chicks. In advanced cases, chicks show severe hemorrhages in various tissues and organs of the body, death losses may range up to 50%, and on dressing for market many birds need be rejected as unfit for human consumption. Outbreaks of "field type" hemorrhagic disease in broilers have been shown to be due to Vitamin K deficiency. Experimental results and field observations indicate that some of the drugs now commonly used in poultry feeds tend to increase Vitamin K requirements.

Consequently the practical feed manufacturer cannot overlook the effects of possible Vitamin K deficiency upon the performance and market values of birds consuming his feeds.

Containing 10 milligrams of Vitamin K per 100 grams, 3 to 5% of Dehydrated Alfalfa Meal, when added to poultry feeds, will provide full protective levels of Vitamin K under unusual stress conditions created by drug additions, disease, wingbanding, dubbing, de-beaking, or incorrectly formulated high energy feeds. Recent experimental results with rats indicate that natural Vitamin K as it occurs in Alfalfa is 100 to 200 times as effective as the synthetic Vitamin K substance, 2 Methyl-1-4 Naphthoquinone, when Sulfa drugs are present. Dehydrated Alfalfa is nature's most abundant practical source of Vitamin K.

Through National's widespread production, storage and laboratory facilities, quality-minded feed manufacturers may be certain of a year 'round source of quality Dehydrated Alfalfa products high in Vitamin K activity.

Remember natural Vitamin K is Mother Nature's way!

This is the third in a series of National advertisements reviewing the more important nutritional qualities found in premium quality dehydrated Alfalfa.

TO BETTER SERVE THE FEED INDUSTRY

ACROSS THE LAND

NATIONAL ALFALFA DEHYDRATING AND MILLING COMPANY

GENERAL SALES OFFICES: BOARD OF TRADE BUILDING • KANSAS CITY 5, MO.

being played by antibiotics in disease control.

The benefits from continuous "high level" feeding of antibiotics include enhanced growth rate, improved feed conversion and reduced mortality in meat birds; and increased egg production and hatchability in laying and breeding birds, Dr. White-Stevens said. He added that field studies comparing the spot or therapeutic method of feeding antibiotics with the continuous or prophylactic method have shown a clear cut economic superiority of the latter in commercial practice.

Dr. Robertson said that a combination of high antibiotics and increased vitamins appears to be the practical means for providing nutrition during stress. It is now generally accepted, he said, that the nutrient level for maximum performance may be higher than previously recognized. It seems reasonable to assume, he added, that when feed intake is sharply reduced during periods of stress, doubling the concentration of the vitamins in feed is needed to maintain the same level of intake in the body, assuming that digestion and utilization are not impaired by the factors that reduce appetite. But it is more likely that the bird's ability to utilize nutrients may be impaired as much as its appetite. For these reasons, an increase in the fortification of the ration is called for.

Dr. Robertson declared that many routine management practices in poultry raising create stress conditions which only infrequently are recognized as such and which can be counteracted by improving the plane of nutrition. He declared that a feed reinforced with increased levels of antibiotics and a concentration of vitamins designed for a 3 to 5 day feeding appears to be the most practical means of improving nutrition during stress.

H. T. Cartrite of the Texas Agricultural Experiment Station at Gonzales, said that in order to hold losses from disease to a minimum in broiler

(Conitnued on page 54)

Track down more SALES with GRAN-I-GRIT

It's harder... saves feed

Tracking down sales is easier with Gran-I-Grit because your customers know the facts about this superior granite grit from advertising aimed at all the biggest feed users in your area. They know that insoluble Gran-I-Grit speeds feed conversion because it's harder. Irregular grinding edges digest mash and grain feeds faster. Birds reach market weight on up to 20% less feed. Light-colored Gran-I-Grit comes in six sizes for all birds from chicks to turkeys. Facts like these mean extra savings for your customers and more sales for you. Plan to stock Gran-I-Grit in 80 lb. bags and 10 lb. feeder packs for chicks. For full details, write TODAY.

Stock this self-feeding Gran-I-Grit Feeder Pack for Chicks.

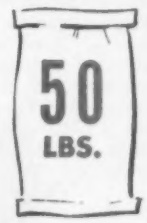
NORTH CAROLINA GRANITE CORPORATION
MOUNT AIRY • NORTH CAROLINA

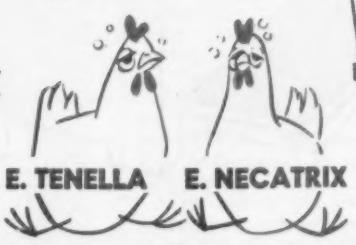
SAVE BY HAULING BOTH BULK AND SACKED FEED ON SAME TRIP

WRITE TODAY for complete information about a Simonsen Unloader to fit any truck with a standard grain or stock box.

SIMONSEN MFG., Dept. F.S., QUIMBY, IOWA

medicates a bag of your feed against





COCCIDIOSIS

The finest preventive you can use at any price

NEW Lee PRODUCT Arzene COMPOUND

SAFE for even the youngest chick when fed continuously in the mash.

POSITIVE PROTECTION even when birds are subjected to massive infestations of coccidia.

NOT AN ARSONIC ACID — Arzene contains no arsonic group, and is five times more active than any arsonic acid now used.

Laboratory tested on thousands of birds — field proved on millions of birds!

For detailed test information, bulk prices and mixing instructions, contact the distributor in your area:

R. W. GREEFF & CO., INC.
10 Rockefeller Plaza,
New York 20, N. Y. and
2502 Tribune Tower,
Chicago 11, Ill.

WALTERS & CO.
6034 Hollis Ave.,
Dallas 17, Texas

or write direct to

GEO. H. LEE CO.
OMAHA 2, NEBRASKA

CONVENTION CALENDAR

Nov. 7-9—Tennessee Feed Manufacturers Assn.; Hermitage Hotel, Nashville, Tenn.: Sec., W. H. Levine, 613 First American National Bank Bldg., Nashville 3, Tenn.

Nov. 10-11—Ohio Animal Nutrition Conference; Plumb Hall, Ohio U.; chm., W. J. Tyznik, Dept. of Animal Science.

Nov. 11-12—Florida Nutrition Conference; U. of Fla., Gainesville, Fla.; chm., J. Francis Cooper, U. of Fla.

Nov. 15-17—Midwest Feed Production School; Hotel President, Kansas City, Mo.; exec. vice pres. of Midwest Feed Mfrs. Assn., Lloyd S. Larson, 20 W. 9th St. Bldg., Kansas City 6.

Nov. 16-17—American Corn Miller's Federation; La Salle Hotel, Chicago; exec. sec., Harry Hunter, 105 West Adams St., Chicago, Ill.

Nov. 17—Feed Dealers Conference; North Dakota Agricultural College, Fargo, N.D.; Sec., L. A. Hansen, P.O. Box 406, Fargo, N.D.

Nov. 22-23 — Western Grain and Feed Association; Fort Des Moines Hotel, Des Moines, Iowa; Sec., Mark G. Thornburg, 928 Des Moines Bldg., Des Moines 9, Iowa.

Dec. 9-10—Animal Nutrition Conference; North Carolina State College, Raleigh; chmn., J. W. Kelly, Poultry Dept., N. Car. State College, Raleigh, N.C.

1955

Jan. 6-8—National Turkey Federation; Atlantic City, N.J.; sec., M. C. Small, P.O. Box 69, Mount Morris, Ill.

Jan. 7-8—Kansas Seed Dealers Assn.; Hotel Broadview, Wichita, Kan.; Sec., O. E. Case, 901 Wiley Bldg., Hutchinson, Kan.

Jan. 10-11—Kansas Formula Feed Conference; Kan. State College, Manhattan, Kan.; chm., Prof. F. W. Atkeson, Dept. of Dairy Husbandry.

Jan. 19-22—Boston Poultry Show; Mechanics Bldg., Boston, Mass.; pres., Thomas Leavitt, Boston Poultry Exposition, Inc., 477 Washington St., Dorchester, Mass.

Jan. 23-25—Indiana Grain & Feed Dealers Association, Inc.; Claypool Hotel, Indianapolis; sec., Fred K. Sale, 600 Board of Trade Bldg., Indianapolis, Ind.

Jan. 27-29—American Dehydrators Assn.; Broadmoor Hotel, Colorado Springs, Colo.; Exec. Vice Pres., Joseph Chrisman, Dwight Bldg., Kansas City 6, Mo.

Jan. 27-Feb. 1 — American Dehydrators Assn.; Broadmoor Hotel, Colorado Springs, Colo.; Exec. Vice-Pres., Joseph Chrisman, Dwight Bldg., Kansas City 6, Mo.

Feb. 1-5—Utah Nutrition and Production Conference; Brigham Young University, Provo, Utah; sec., Lorin E. Harris, Utah State Agricultural College, Logan, Utah.

Feb. 7-8 — Grain Processing Ma-

IT'S SENSATIONAL!

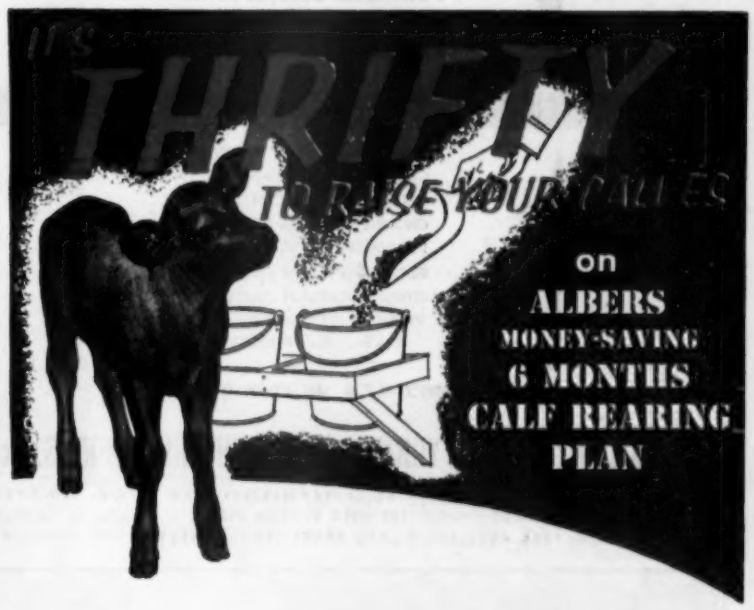
The package that's packed with *sales appeal!* Moisture-proof! No leakage or spillage! No spoilage or waste! Clean, colorful, eye-catching! Write for prices on Premier Peat Moss for Gardens and Premier Litter for Poultry—*now better than ever!*

Premier Peat Moss Corp., 535 Fifth Ave., New York 17

SKYROCKETING! Are you ready?

One of a Series of Ads Appearing in the Following Publications:

Hoard's Dairyman
Rural New Yorker
Progressive Farmer (Texas)
Pennsylvania Farmer
California Farmer
Oregon Farmer
Washington Farmer
Utah Farmer
Idaho Farmer



FIRST, you *save milk,* because Albers SUCKLE safely replaces whole milk and skim milk feeding.

Second, you *save calves,* because the scientific combination of antibiotics and nutrients in Albers SUCKLE, CALF MANNA and CROWD greatly reduces calf mortality and disease.

Third, you *save time,* because the Albers Plan minimizes troublesome milk or liquid feeding. In 3 to 5 weeks, most calves raised on the plan are weaned on to dry feed completely.

And most important, you *save money,* because this program will help you raise more and better milk producers that pay a bigger profit after they come into production. The same people that developed this program also raised the World's greatest butterfat producer for all breeds and ages.

Better feed dealers everywhere stock and recommend Albers Calf Feeds. Regardless of what milk replacer is used, however, it is important that CALF MANNA be fed from the very first day to 6 months of age.

See your CALF MANNA dealer today and write for your FREE copy of the booklet, "Albers 6 Months Calf Rearing Plan."

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BROKER JOBBER
• FEEDSTUFFS •
MILO-KAFIR-WHEAT-FIELD SEED
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FOrtune 4031

ALL FEED INGREDIENTS
Eugene L. SELDERS CO.
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Millfeeds, etc. TWX - KC 115

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TWINES

STOCK- SUCKLE AND CALF MANNA
SELL- SUCKLE AND CALF MANNA
Your Customers will be asking for them!

For Further Information ask your CALF MANNA salesman or your feed jobber or
Write to .

IODIZE YOUR FEED MIXTURES

with NYQ

POTASSIUM IODIDE-CALCIUM STEARATE MIXTURE

IT ALWAYS ASSURES YOU

- MAXIMUM IODINE LEVELS
- HIGH DEGREE OF STABILITY
- UNIFORM DISTRIBUTION
- EXTREME FINENESS—325 MESH
- ECONOMY

THE NEED EXIST... BE SURE ... OTHER N.Y.Q. PRODUCTS

ANTIBIOTIC FEED SUPPLEMENTS
CALCIUM PANTOTHENATE DEXTROROTATORY
CALCIUM PANTOTHENATE MIXTURE
CHOLINE CHLORIDE MIXTURE AND SOLUTIONS
POTASSIUM IODIDE USP
POTASSIUM IODIDE FREE FLOWING POWDER
OTHER POTASSIUM IODIDE MIXTURES
VITAMINS (SYNTHETIC):
A...B1...B2...B12 MIXTURE...C...B6...NIACIN

SPECIFY N.Y.Q. ON YOUR ORDERS

NYQ
The Full Line Fine Chemical House

The NEW YORK QUININE & CHEMICAL WORKS, Inc.

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CHICAGO PLANT: 729 WEST DIVISION STREET • CHICAGO 10, ILLINOIS
LOS ANGELES • SAN FRANCISCO • SEATTLE • PORTLAND

chinery Manufacturers Assn.; Edgewater Beach Hotel, Chicago, Ill.; sec., Raymond J. Walter, 511 Fifth Ave., New York 17.

Feb. 11-13—Institute of American Poultry Industries Fact Finding Conference; Kansas City, Mo.; 221 North LaSalle St., Chicago 1.

Feb. 16—Mutual Millers and Feed Dealers Assn.; Hotel Statler, Buffalo, N.Y.. sec., Mrs. Gustavus A. Bentley, 41 Chautauqua Ave., Jamestown, N.Y.

Feb. 18—Washington State Feed Assn.; Olympic Hotel, Seattle, Wash.; sec., John G. Wilson, 814 2nd Ave. Bldg., Seattle 4, Wash.

Feb. 20-22—Colorado Grain, Milling & Feed Dealers Assn.; Shirley-Savoy Hotel, Denver, Colo.; sec., Ralph Bouze, 605 Mining Exchange Bldg., Denver 2, Colo.

Feb. 20-22—Ohio Grain and Feed Dealers Assn., Inc.; Deshler-Hilton Hotel, Columbus, Ohio; Sec., H. Ralph Kagay, 65 N. Roys Ave., Columbus 4, Ohio.

Feb. 23-24 — Virginia Polytechnic Institute Nutrition School for Feed Men; Hotel Roanoke, Roanoke, Va.; Chm., Prof. Paul M. Reaves, Virginia Polytechnic Institute, Blacksburg, Va.

Feb. 25—National Feeder Finance Credit Conference; Curtis Hotel, Minneapolis, Minn.; Sec., Rubert Lindholm, 502 Thorpe Bldg., Minneapolis, Minn.

March 3 — Tenth Distillers Feed Conference; Sheraton-Gibson Hotel, Cincinnati, Ohio; exec. dir., Lawrence E. Carpenter, 1232 Enquirer Bldg., Cincinnati 2, Ohio.

March 14-16 — Midwest Feed Mfrs. Assn.; Municipal Auditorium, Kansas City, Mo.; sec., Lloyd S. Larson, 20 W. 9th St., Kansas City.

March 14-16 — National Feed Industry Show; Municipal Auditorium, Kansas City, Mo.; co-mgr., Eldon H. Roesler, 1712 West St. Paul Ave., Milwaukee.

Mar. 17-18 — Maryland Nutrition Conference; Shoreham Hotel, Washington, D. C.; Chm., Prof. G. L. Romoser, Poultry Dept., U. of Md., College Park, Md.

April 4-5—Texas Feed Mfrs. Assn.; Baker Hotel, Mineral Wells, Texas; exec. sec., W. B. Orr, Box 655, Bryan, Texas.

April 7—Ill. Swine Growers Day; U. of Ill., Urbana; chm., S. W. Terrill, Dept. of Animal Science.

April 29-30 — Kansas Grain and Feed Dealers Assn.; Hotel Baker, Hutchinson; sec., O. E. Case, 901 Wiley Bldg., Hutchinson.

May 15-16—Missouri Grain, Feed & Seed Assn.; Hotel Governor, Jefferson City, Mo.; Sec., D. A. Meinershagen, Higginsville, Mo.

May 25-27—American Feed Manufacturers Assn.; Morrison Hotel, Chicago; sec., W. T. Diamond, 53 W. Jackson Blvd., Chicago 4, Ill.

June 5-7—Indiana Grain and Feed Dealers Assn., Inc.; French Lick, Ind.; sec., Fred K. Sale, 600 Board of Trade Bldg., Indianapolis 4.

June 5-7—Georgia Feed & Poultry Conference; Dinkler Plaza Hotel, Atlanta, Ga.; sec., Will L. Kinard, 208 William-Oliver Bldg., Atlanta 3, Ga.

June 17—Pacific Northwest Grain Dealers Assn., Inc.; Davenport Hotel, Spokane, Wash.; sec., Pete Stallcop, 418 Peyton Bldg., Spokane 1, Wash.

June 20-24 — Grain Elevator and Processing Superintendents; Winnipeg, Man., Can.; sec., Dean M. Clark, Board of Trade Bldg., Chicago.

June 22-24—Association of Southern Feed and Fertilizer Control Officials; Jung Hotel, New Orleans, La.; Sec., Bruce Poundstone, Agricultural Experiment Station, Lexington 29, Ky.

June 23-25—Grain Processing Machinery Mfrs. Assn.; Northernaire, Three Lakes, Wis.; Sec., Raymond J. Walter, 511 Fifth Ave., New York 17, N.Y.

Using ordinary print bags? Get new impact with this

BRITE IDEA!

P/K PILLOW CASE BAG . . . pioneered by Percy Kent NOW BETTER THAN EVER! New BRITE-Print designs are now available! P/K BRITE-Print colors are dazzling . . . brighter than those in fine quality yard goods. Gorgeous combinations of lively, true colors are printed on backgrounds of the whitest possible white . . . the contrast is striking! This new improvement is almost as important an advance as when Percy Kent first introduced the Pillow-Case Bag. Extra-seamed for 25's, 50's or 100's. Package your product in P/K BRITE-Print Pillow Case Bags . . . eye-catching as no other print on the market today!

always something new!

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THE MILL THAT SATISFACTION BUILT!

A successful business is built on the satisfaction of its customers. Cosby-Hodges —producers of time-tested "JAZZ" feeds — has been making feeds for every poultry and livestock need for generations of satisfied customers.

Sixty-Eight Years of Progress

in developing ever higher standards in the production of top quality feeds stand behind the growth of Cosby-Hodges.

IF YOU ARE NOT NOW A "JAZZ" DEALER . . . remember what we have done for other dealers we can do for you. Some dealer in your community will soon be enjoying new business, bigger profits. Why not you? Write now for more "JAZZ" information.

"Jazz" offers you . . .

1. A complete line of top quality feeds for every need — the result of years of scientific testing and research to assure you of the best possible return on your poultry and livestock investment.

2. A field service organization of experienced "JAZZ" representatives to assist you in developing the most profitable feeding program for your particular feeders.

3. A convenient information service that will continue to assist you in answering your feed problems and management questions, to keep you abreast of latest developments in livestock and poultry farming, and to help you build a more efficient operation to provide a more secure future for yourself and your family.

THE LARGEST PUSH-BUTTON MILL IN THE SOUTH

Now at this great new mill, designed to provide the most modern scientific methods of feed production, Cosby-Hodges demonstrates the far-seeing eye to progress that has made this company one of the largest feed producers in the entire South.

Coming Soon-The Sensational
"Jazz Trio"
to Triple Your Profits!

An exclusive package franchise plan that will assure the dealer of greatly increased profits . . . that's the "JAZZ TRIO!" Write, wire or phone for details.

COSBY-HODGES
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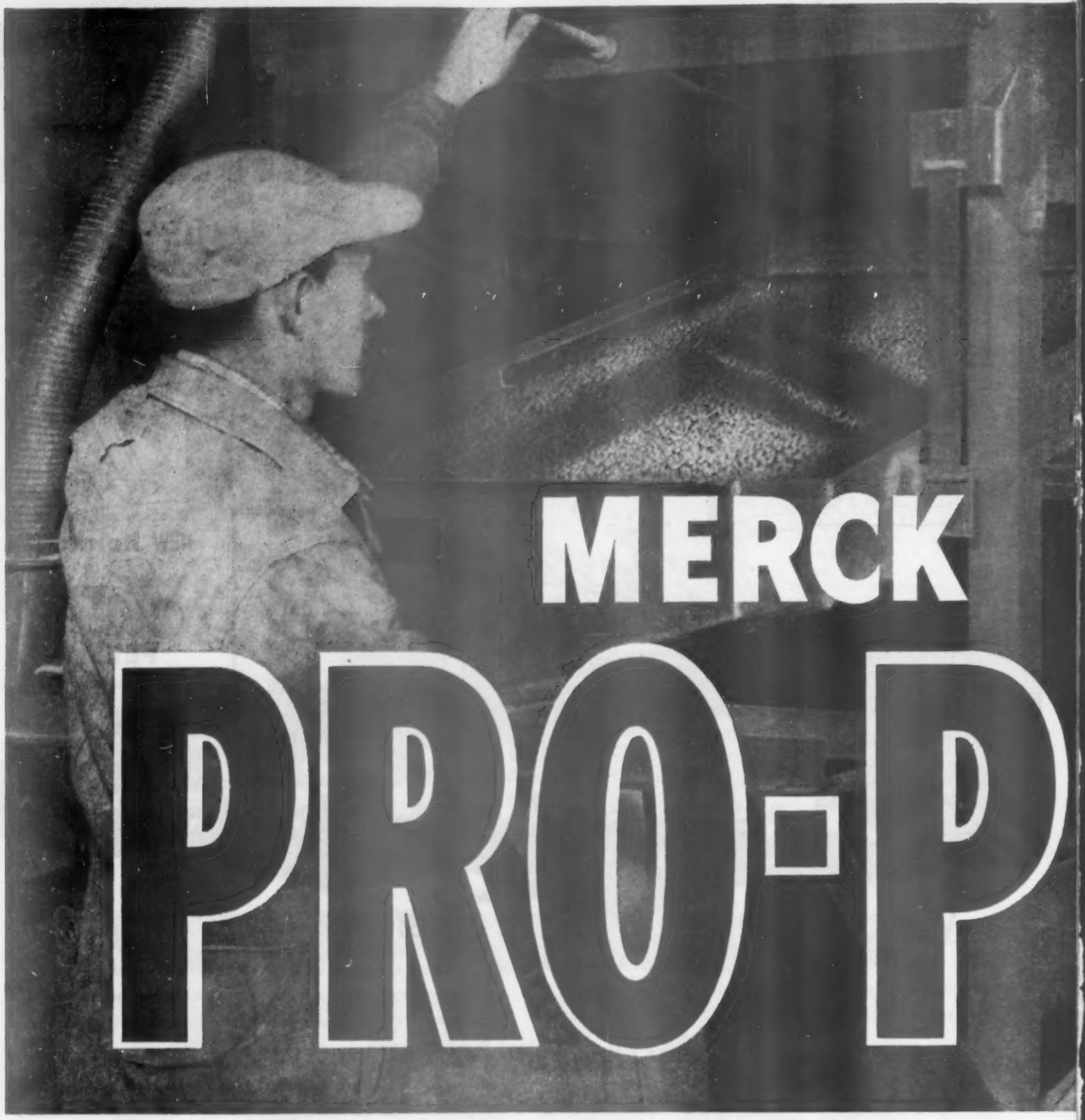
BIRMINGHAM, ALABAMA



The Superior STABLE Procaine Penicillin Feed Supplement

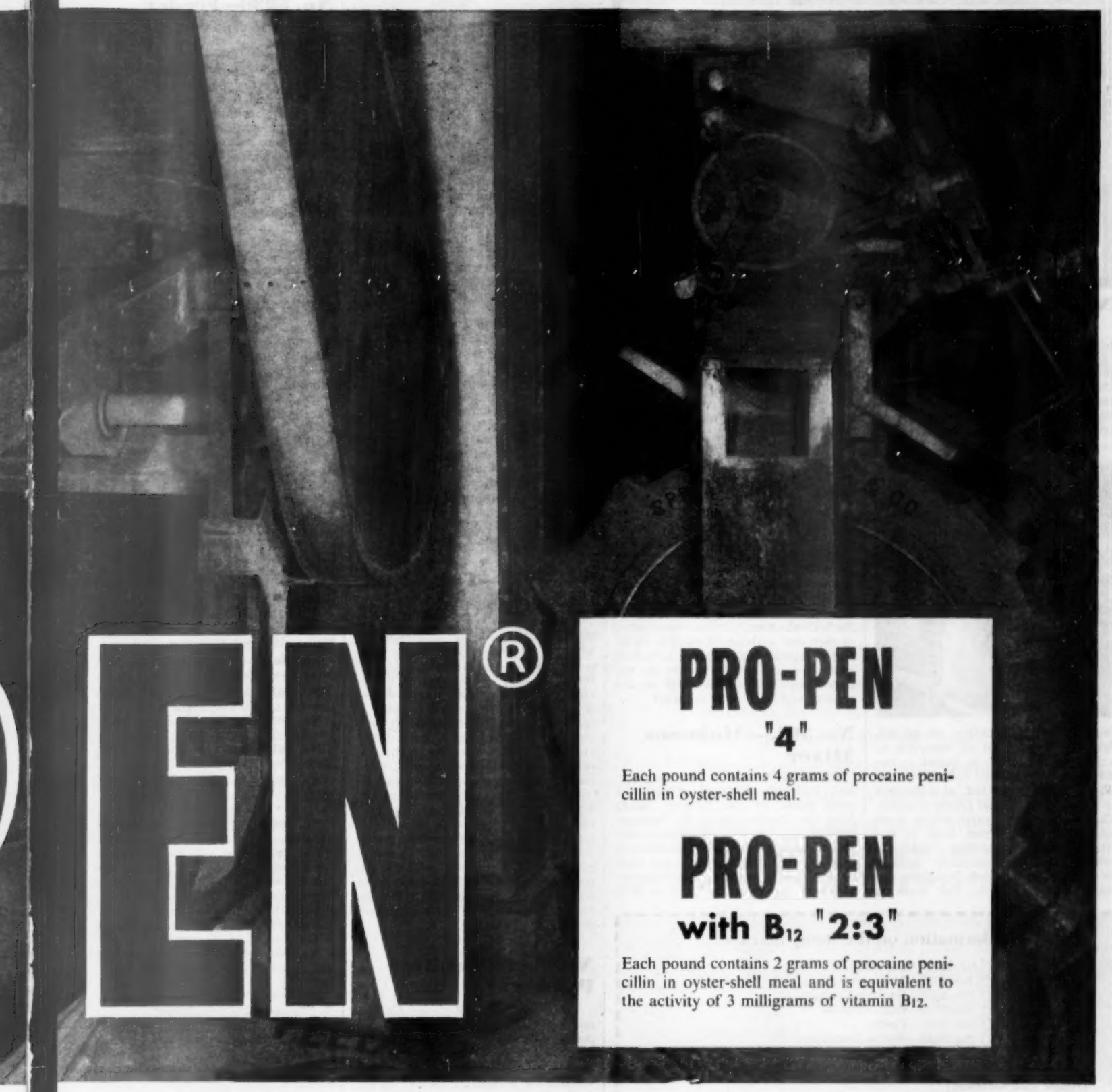
With Merck PRO-PEN you can be sure that the extraordinary growth-promoting power of procaine penicillin is "in the bag" when it is opened by the feeder.

PRO-PEN, a special form of penicillin developed by Merck for feed use, has been proved in extensive tests[1] to possess superior stability in commercial feeds.

These tests covered all crucial factors—high storage temperatures, high moisture, pelleting. Reprints of the report are available on request.

Procaine penicillin is the acknowledged, outstanding growth stimulant for chickens and turkeys. For swine also, it is one of the antibiotics of choice for promoting growth, enhancing feed efficiency, and reducing the number of runts.

You can get *all* these advantages *plus* outstanding stability in PRO-PEN. Included in your formulas, PRO-PEN helps your customers make bigger profits—builds loyalty to your brand.



EN®

PRO-PEN
"4"

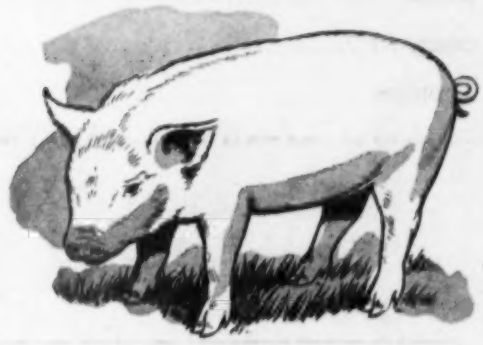
Each pound contains 4 grams of procaine penicillin in oyster-shell meal.

PRO-PEN
with B_{12} "2:3"

Each pound contains 2 grams of procaine penicillin in oyster-shell meal and is equivalent to the activity of 3 milligrams of vitamin B_{12}.

PRO-PEN brings you *other* big benefits:

1. **IT'S ECONOMICAL** —effective amounts can be included for less than two cents per bag.
2. **IT'S EASY TO HANDLE** —carrier facilitates accurate and uniform mixing.
3. **IT HAS HIGH CONSUMER ACCEPTANCE** —big, full-page color ads the year 'round in leading poultry journals drive home the superiority of PRO-PEN.



1. Hollenbeck, C. M., Danner, W. E., and Mahoney, J. F., *Poultry Science*, 33:425-427, March 1954.

Research and Production for

Better Poultry and Animal Nutrition

MERCK & CO., INC.

Manufacturing Chemists

RAHWAY, NEW JERSEY

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Worth Looking Into

New Products
New Services
New Literature

This reader service department announces the development of new and improved products, new services and new literature offered by manufacturers and suppliers. Claims made in this department are those of the firm concerned. Use the accompanying coupon to obtain the desired information.

No. 6152—Lift Truck

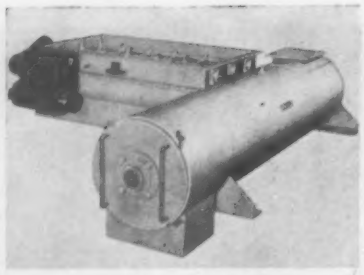
The Colson Handler, a gasoline powered, rider-type lift truck with hydraulic drive and hydraulic control, is being introduced by the Colson Corp. Main feature of this 4,000 lb. capacity truck is a single control lever for throttle, power lift and direction. When lever is moved forward — or backwards for reverse — a hydraulic pump, operating off engine, delivers oil from an oil reservoir to a fluid motor which is linked to the drive wheel by a gear reduction unit. When the lever is lifted, oil is pumped to the platform's load lifting cylinder. The unit automatically shifts from low to high and from high to low either forward or reverse. Cushioned brakes are automatically applied when lever is released. Weighing approximately 1,075 lb., the truck is powered by a 6 h.p., single cylinder, four cycle engine. Maximum speed is four miles per hour. The power unit is 29 in. wide and 30 in. long. The platform is 24 in. wide and is available in seven standard lengths ranging from 30 to 72 in. Lift height is 3 in. To obtain more complete details check No. 6152 on the coupon and drop it in the mail.

No. 5033—Swine Nutrition

The results of a study on swine nutrition by four members of the agricultural experiment station, Iowa State College, have been printed in research bulletin No. 409. It is entitled, "New Procedures in Estimating Feed Substitution Rates and in Determining Economic Efficiency in Pork Production." Replacement rates of corn and soybean oil meal in fortified rations for growing-fattening swine are outlined. To secure the 82-page booklet check No. 5033 on the coupon and drop it in the mail.

No. 5025—Molasses Mixer

Announcement of a new roughage and molasses Hi-speed mixer has been made by the Wenger Mixer Mfg. Co. Designated as the Wenger 1200 series, this new continuous mixer is claimed to have a production capacity upwards of 20 tons per hour on dairy feeds weighing approximately 24 lb. per cubic foot (10 to 20% molasses). Lighter, bulkier materials will be handled equally well, but with slightly smaller capacities, the firm states. Especially designed for the large capacity mixing of bulky roughage feeds, this new mixer is equipped with a live bottom bin feeder designed to eliminate bridging of bulky feeds in the bin, including ingredients as chopped hay, beet pulp, citrus pulp, dehydrated alfalfa meal, cottonseed hulls, rice and oat by-products, grain and seed screenings, chopped milo bundles, etc. A separate percentage feeder for concentrates, mineral and vitamin premixes, etc., is available, thus making it possible to mix these ingredients with the roughage, the firm states. Several liquid feed ingredients — molasses, animal fats, fish solubles, etc., may be mixed simultaneously, it is said. A brochure is available on request. Check No. 5025 on the coupon and drop it in the mail.



No. 5011—Tag Coder

A device for applying a code to the tag has been developed by Mill Engineering Co. for use in connection with its Automatic Bag-Tagger. The coder works on the principle of perforations that are spaced at different intervals and the standard unit is offered in 400 combinations. A coder is also available in 8,000 combinations and by the use of different shaped perforations additional combinations can be secured. The coder is operated by the same air supply that operates the automatic feature of the Bag-Tagger. Inquiries must be accompanied by samples of tags and the sewing machine model and type must be specified. To secure additional information about the coder, check No. 5011 on the coupon, clip and mail it, together with samples of tags and the sewing machine model and type.

No. 5028—Poultry Product

The Dr. LeGear Medicine Co. announces the marketing of a new product to combat hemorrhagic disease and "crazy chick" disease in broilers. This new product was developed by a formula change in Dr. LeGear's Plus combined with Poultry Prescription, the vitamin, mineral, tonic drug and antibiotic supplement for poultry. This product is now available in 100 lb. drums. For further information check No. 5028 on the coupon, clip and mail it.

No. 5029—Bin Indicator

A new model bin level indicator incorporating a built-in bull's-eye signal light for use in installations requiring a signal which can be readily seen by an operator, is announced by the Bin-Dicator Co. Called the model "AL" Special Bin-Dicator, it is said to be a complete, visual signal system in one package. It comes assembled and ready for connection to the user's power source. A toggle switch is provided so that the signal light may be shut off if desired. It is claimed to be particularly suitable for use on packaging hoppers, scale hoppers and small bins handling practically any bulk material. To secure more complete details check No. 5029 on the coupon and drop it in the mail.

No. 5030—Feeder

A new feeder especially designed to control the flow of dry milling powders with precision has been introduced by Sterwin Chemicals Inc. It handles dry powders of variable densities and flow characteristics. It will feed continuously, and in controlled amounts, such dry materials as vitamin enrichment concentrates, micronutrients, leavening agents, powder bleaches, bromate mixtures and mineral mixes. The feed rate is obtained by turning a single, micrometer adjustment knob. This adjustment of the feeding gate, which is made at the start of operations by setting a calibration and the gear ratio, provides a constant rate of flow. The feeder is 27 in. high and requires 22 in. by 27 in. of floor space. A hopper is equipped with an agitator and a transparent plastic cover. The flow can be observed through a plastic window in front of the feeder. Also available from Sterwin is equipment for overhead suction pipe from the feeder to the flow agitator. To secure more complete details check No. 5030 on the coupon and mail it.

Also Available

The following new products have been described in previous issues of Feedstuffs and information about them may still be obtained by jotting the appropriate number on the coupon and forwarding it to Feedstuffs.

No. 5013—Antibiotics booklet, Arcady Farms Milling Co.

No. 5014—Bulk feed body, Highway Equipment Company, Inc.

No. 5015—Corn crib, Columbian Steel Tank Co.

No. 5016—Live-roll scalper, Superior Grain Separator Co.

No. 5017—Rabbit Nutrition booklet, Arcady Farms Milling Co.

No. 5018—Roll-away poultry nest, Chore-Time Equipment, Inc.

No. 5019—Booklet on corn cob utilization, John J. Clay Sales Co., Inc.

No. 5020—Defluorinated phosphate supplement, Coronet Phosphate Co.

No. 5021—List of special days, weeks and months, 25¢ a copy, obtain directly from Chamber of Commerce of the U.S., 1615 H St., N.W., Washington, D.C.

No. 5022—CRD treatment, Merck & Co., Inc.

No. 5023—Premiums and patronage dividend plan, Honeggers' & Co., Inc.

No. 5024—Wound-rotor motor, Allis-Chalmers Manufacturing Co.

No. 6120—Bulk shipment with rubber and fabric containers, United States Rubber Co.

No. 6125 — Plant disease poster, Panogen, Inc.

No. 6127 — Portable wheel conveyor, Associated Metal Fabricators, Division of Jersey Sheet Metal Products, Inc.

No. 6129—Fence post treatment, Mutual Chemical Company of America.

No. 6131 — Urea brochure, Grace Chemical Co.

No. 6132—Dump bucket, Prime-Mover Co.

No. 6134—Mobile power shovel, Industrial Truck Division, Clark Equipment Co.

No. 6135—Bin, hopper vibrators, Cleveland Vibrator Co.

No. 6137—Fly killer, d-Con Co., Inc.

No. 6138—Lift trucks, Baker-Raulang Co.

No. 6139—Net weighing machines, Exact Weight Scale Co.

No. 6140—Aerosol products folder, Tru-Pine Co.

No. 6145—Wood preservative, Triangle Chemical Co.

No. 6146 — Conveyor equipment, Continental Gin Co.

No. 6147—Steel cab, Clark Equipment Co.

No. 6150—Garden cultivator, Roto-Hoe & Sprayer Co.

Send me information on the items marked:

- ☐ No. 5011—Tag Coder
- ☐ No. 5025—Molasses Mixer
- ☐ No. 5028—Poultry Product
- ☐ No. 5029—Bin Indicator
- ☐ No. 5030—Feeder
- ☐ No. 5033—Swine Nutrition
- ☐ No. 6152—Lift Truck

Others (list numbers) .....

NAME .....

COMPANY .....

ADDRESS .....

——CLIP OUT — FOLD OVER ON THIS LINE — FASTEN (STAPLE, TAPE, GLUE) — SEAL——

FIRST CLASS
PERMIT No. 2
(Sec. 34.9, P. L. & R.)
MINNEAPOLIS, MINN.

BUSINESS REPLY ENVELOPE
No postage stamp necessary if mailed in the United States

POSTAGE WILL BE PAID BY—

Feedstuffs

P. O. Box 67,

Reader Service Dept. Minneapolis 1, Minn.

Here's your most economical source of important whey nutrients!

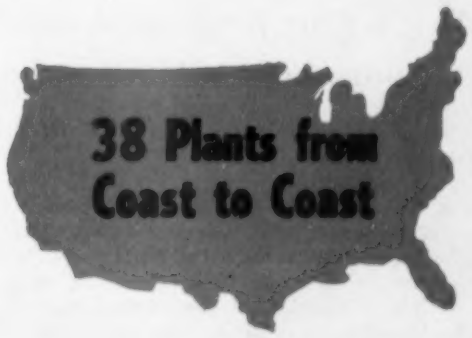
100 LBS. NET WEIGHT
Peebles' WHEY Products
FOR POULTRY AND ANIMAL NUTRITION
AN AID TO GROWTH-HEALTH-PRODUCTION
MANUFACTURED BY
WESTERN CONDENSING COMPANY
SAN FRANCISCO CALIF. APPLETON WIS.
Peebles' MOR-LAC
for special formulas requiring high lactose milk nutrients
Peebles' LACTO-G
for high-quality, uniform, spray-dried whey
Peebles' M-N-C
for higher concentrations of non-lactose nutrients including the Whey Factor

Peebles' Whey Products add Concentrated Grow Power... step up the performance of your feeds.

USE Peebles' Whey Products in all your formula feeds that call for whey or milk nutrients. Peebles' Products add extra grow power, boost feed performance during critical periods of gestation, lactation and early growth. Give your feeds improved feedlot performance at low cost. Supply high concentrations of the important whey nutrients. Peebles' Whey Products are the most potent known source of the Whey Factor that extends the effectiveness of antibiotics, B_{12}, fish meal and animal proteins in your feeds.

Western's vast production and warehouse facilities . . . 38 plants from coast to coast . . . assure the availability of Peebles' Whey Products — as much as you want, when you want it, the year around.

Write the Appleton office for details.
Free formula service also available.



WESTERN CONDENSING COMPANY

APPLETON, WISCONSIN • PETALUMA, CALIFORNIA

World's Largest Producer of Whey Products

Happy Has a Problem

TOWARD the close of a dark fall day, Happy Jones, owner of the hamburger stand across the street came into the Brooks Feed Mill, a cardboard sign tucked under his arm. He was a bald, white shirted and aproned fellow and when he smiled, which he often did, four gold teeth were visible among a few white ones.

Only today Happy was not happy. He looked sad and troubled. "Where's Joe?" he asked glumly.

"In the office," Smiley Johnson said, wondering what was bothering Happy.

Happy went into the office and found Joe seated at his desk. The brown haired feed dealer looked up, spotted the unhappiness on his face, and said, "Happy—what's the matter?"

Happy sat down in a chair. "Plenty," he said. He fingered the cardboard sign, then handed it to Joe. "I'm afraid I've got to give this back, Joe. It can't hang in my cafe any more."

Joe took the sign and looked at it. The copy on the sign said, "Joe Brooks Has Quality Feeds. He Treats You Right." It was a sign which Happy, his friend, had agreed to hang in his cafe, if Joe would hang a sign in his mill boosting Happy's hamburger and short order stand.

Joe looked puzzled. "Why, Happy," he said. "I don't understand. What—what does this mean?"

Happy leaned forward sadly. "Joe," he said. "I've always cooperated with you on a lot of things, haven't I?"

Joe nodded. "You sure have. That's why I can't understand your bringing back this sign of mine. I thought we were helping each other out in getting business."

"Yes, we did," Happy agreed. "When you wanted to put on a bean soup day, I brought my kettle and some equipment over here and made it possible for you to do so."

"And I put up a sign which told farmers that they could get good bean soup every day at your cafe," put in Joe.

Happy nodded. "And I cooperated with you when you gave farmers tickets for a 25¢ beef stew dinner plate. I made no money on the deal at all."

"But farmers got into the habit of taking their families to your cafe for full dinners, for snacks, etc."

"That's right," Happy said glumly. "That's why I feel so bad about bringing back your sign. You and I have always been good friends. We've been trout fishing together, hunting in northern Wisconsin and in Canada. And then this has to happen."

"What happened, Happy?" asked Joe earnestly.

Happy Complains About Business

"It's you who did it," Happy stated miserably. "You—selling farmers all the milk they want to drink for 10¢ when they come to town. It's hurting my business something terrible."

Joe looked amazed. "It is?"

Happy nodded. "It sure is. Farmers come in and order hamburgers or pie or doughnuts and when we ask them 'what do you want to drink?' they laugh and say 'oh, we're goin' over to Joe Brooks to get all the milk

(Continued on page 46)

DOW

DOW METHIONINE

MAKES TODAY'S BROILER AND TURKEY FEEDS MODERN

The poultry industry has come a long way since the "Chicken on Sunday" era! Today, poultry is mass-produced by progressive management and scientifically balanced feeds. This makes chicken or turkey a thrifty choice for the family table instead of a special-occasion item. Methionine keeps poultry rations "in balance."

Low-level methionine supplementation pays for itself on the basis of bringing broilers and poults to market weight on less feed—plus the improvement in feathering and finish. This is reflected in bigger income over feed cost for the poultryman and in top-quality poultry at reasonable prices for the consumer.

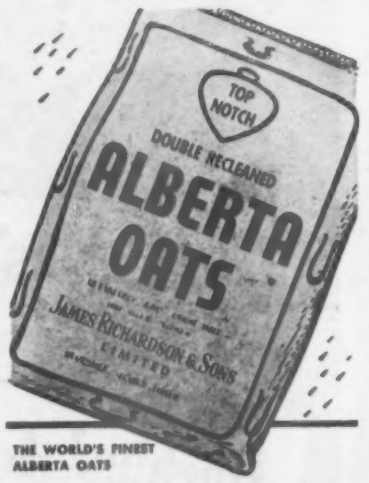
Dow feed supplement takes guesswork out of nutritional balance and performance . . . brings feeds to their most efficient peak

During World War I, it was big news in the poultry industry when the sale of commercial poultry feeds reached a new high of nearly 5 million tons a year. At the end of World War II, the total rose to 19 million tons a year. Today it has passed the 20 million ton yearly mark. Nutritional developments have kept pace with the increased production of high-efficiency poultry rations. Every year, more feed—*better feed*—is converted into more pounds of high quality meat birds at *lower feed costs* to the grower.

Improved broiler and turkey rations containing vitamins, antibiotics and nutrients unknown a few years ago reach a new peak in feed efficiency when they are supplemented with methionine, the essential protein building block. Synthetic methionine added at low levels balances the variation in "natural" methionine which can be expected in high-grade corn-soy feeds, with or without fish meal added. Methionine-supplemented feeds, which bring the birds to market weight on less feed, are making chicken —also turkey—a thrifty buy for the family food dollar. The words "Methionine Added" on your feed tags mean top quality feed to your customers. Ask your nutritional advisor for complete information on methionine, the *modern* feed supplement for controlled premixes and balanced poultry rations. THE DOW CHEMICAL COMPANY, Agricultural Chemical Sales Department, Midland, Michigan.

you can depend on DOW AGRICULTURAL CHEMICALS

DOW



THE WORLD'S FINEST ALBERTA OATS

JAMES RICHARDSON & SONS
LIMITED
ESTABLISHED 1857
14TH FLOOR, 2 KING ST. E., TORONTO
Elgin 4-8361
Head Office, Winnipeg, Canada

SCROGGINS GRAIN CO.
Phones: BR 3913 — Teletype: MP 344
WHOLE and GROUND GRAINS and SCREENINGS
MINNEAPOLIS, MINNESOTA

the feed bags backed by
107 years of know-how . . .

CHASE
Multiwalls

Sewn valve, sewn open mouth,
pasted valve, pasted open mouth

SINCE 1847
CHASE BAG COMPANY
General Sales Office, 309 West Jackson Blvd., Chicago 6, Illinois
30 BRANCHES AND SALES OFFICES—STRATEGICALLY LOCATED

Tests prove this is the PROFIT

Continuous "HIGH LEVEL" feeding of

Millions of birds have *proved* that continuous "HIGH LEVEL" feeding of AUREOMYCIN **is profitable! Scores of tests have shown** that this method of feeding "heads off" disease—**reduces mortality—increases** market weights of broilers—improves hatchability and egg **production—saves feed—gives** poultrymen HIGHER PROFITS! **No other antibiotic equals** AUREOMYCIN **in its ability** to suppress MORE disease-producing germs!

See—in the chart below—the remarkable results and the EXTRA **profits obtained with** continuous **"HIGH LEVELS"** of AUREOMYCIN! Recommend this new, proved feeding **method to your customers!**

Fine Chemicals

*Trade-Mark

AMERICAN *Cyanamid* COMPANY
Fine Chemicals Division
30 Rockefeller Plaza New York 20, N. Y.

NONSPE

"Much less disease... particularly Air Sac and Enteritis... with HIGH LEVELS of AUREOMYCIN"

These are the words of a large broiler producer in the Delmarva area. The comparison figures, below, show the remarkable results this producer has obtained with the new preventive program.

See the

OLD FLOCK RECORDS before AUREOMYCIN was fed.

Here's a random sampling of 25 flock records from November, 1952 to June, 1953

Number flocks	25
Number birds started	234,740
Mortality (%)	9.6
Days to reach market	84
Average market weight (lb.)	3.19
Feed per pound of gain (lb.)	3.28
Total market weight per 1000 birds started	2882
NET RETURN per 1000 birds started (Figured on a 25c market)	$64

NEW FLOCK RECORDS afte

at 50 grams per ton of feed. The

Number flocks	
Number birds starte	
Mortality (%)	
Days to reach marke	
Average market wei	
Feed per pound of g	
Total market weight	
NET RETURN per 10 (Figured on a 25c	

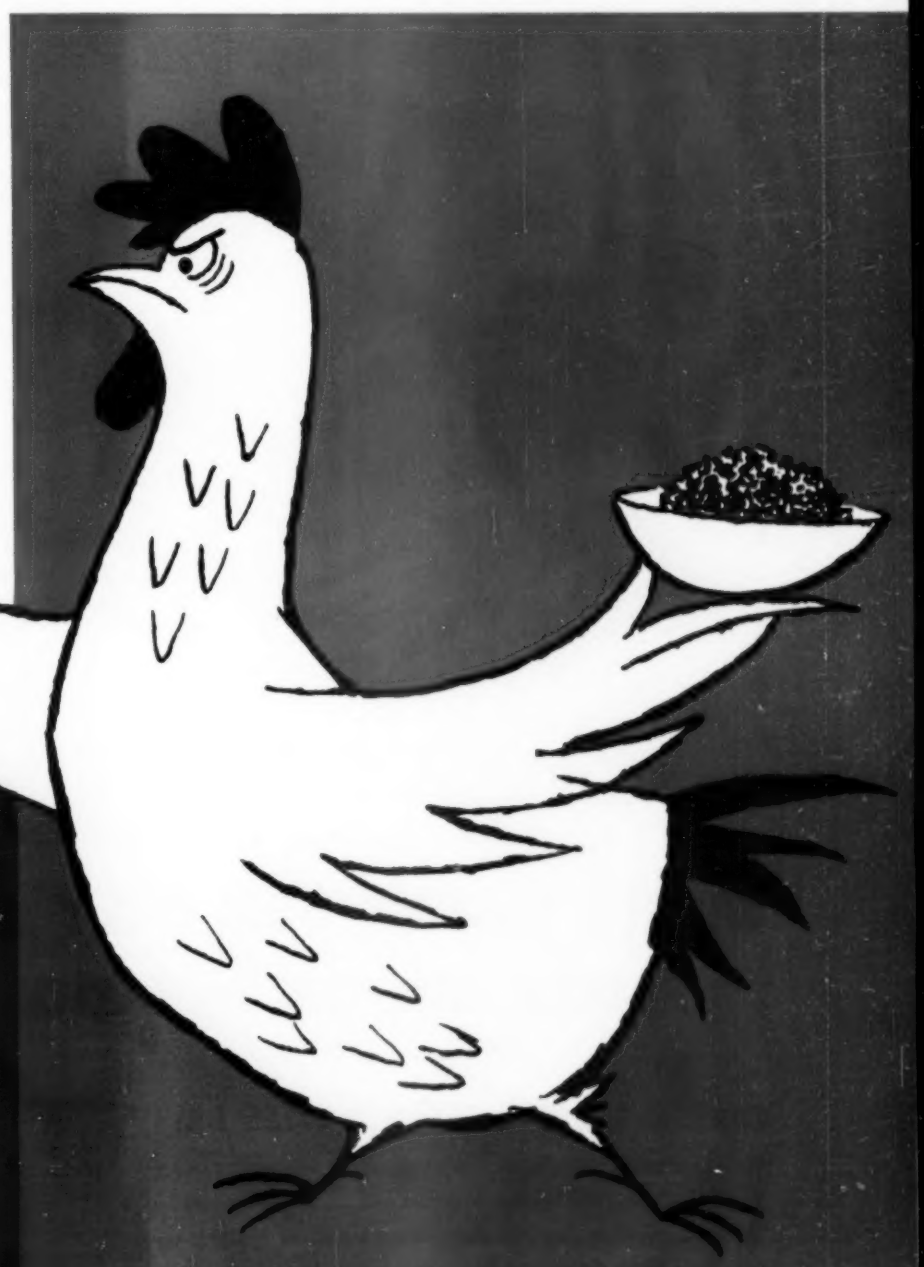
Says this broiler producer—"We are growing

T WAY TO KEEP DISEASE OUT!

AUREOMYCIN*

CHLORTETRACYCLINE

CRD
AIR SAC
SINUSITIS
BLUE COMB
PECIFIC ENTERITIS



e difference!

r AUREOMYCIN was fed continuously

records of 18 flocks from June, 1953 to February, 1954

	18
d	129,000
	5.7
t	85
ght (lb.)	3.49
ain (lb.)	3.03
per 1000 birds started	3288
00 birds started	$119
market)	

all our broilers on continuous **HIGH LEVELS** of **AUREOMYCIN**"

USDA Proposes Changes For Flock Improvement

WASHINGTON—The U.S. Department of Agriculture is considering a proposed revision of the National Poultry and Turkey Improvement Plans.

Among proposed changes in the plans are:

(1) Discontinuation of hatchery classifications. All participating hatcheries are to be designated "NPIP Participating" or "NTIP Participating" and may produce and sell chicks or poults of any breeding classification attained by the parent flock. Previously, with certain exceptions, all chicks or poults sold by a participating hatchery had to be of the same classification.

(2) Modification of breeding classification to include recognition based upon performance of the stock in random-sample egg and meat production test. This will have practical application to any breeder of superior stock, regardless of the method of breeding used.

(3) Inclusion in the plan of a national random sample performance testing program.

(4) Qualification for a disease control class independent of a breeding classification. Previously many states have required participants to qualify for both.

(5) Elimination of the U.S. Pullorum-controlled classification, which permitted a tolerance of fewer than 1% of reactors on the last test.

(6) Broadening of disease control phases of the program to include specifically fowl typhoid and official state agency jurisdiction over control of all salmonella infections.

(7) Deletion in several instances of the details of administrative procedure from provisions of the plans, leaving them to the discretion of the official state agency.

BUYS MONTANA FEED STORE

SIDNEY, MONT.—Ronald Stuart has purchased the Alfa Blend Feed Service at Sidney, Mont.

1955 Delmarva Poultry Site to Be Onancock, Va.

ONANCOCK, VA.—The site of the 1955 Delmarva chicken festival will be Onancock, Va., it was announced by the Eastern Shore Poultry Exchange. At the same time new officers of the exchange were announced. They are:

Ray Murphy, Salisbury, Md., president; Louis W. Shockley, Snow Hill, Md., A. J. (Pete) Gray, Horsey, Va., and F. Glenn Crain, Georgetown, vice presidents; Clifford M. Dryden, Pocomoke City, Md., treasurer; James P. Winchester III, Georgetown, secretary, and John Rogers, Accomac, Va., assistant secretary.

FIRM INCORPORATES

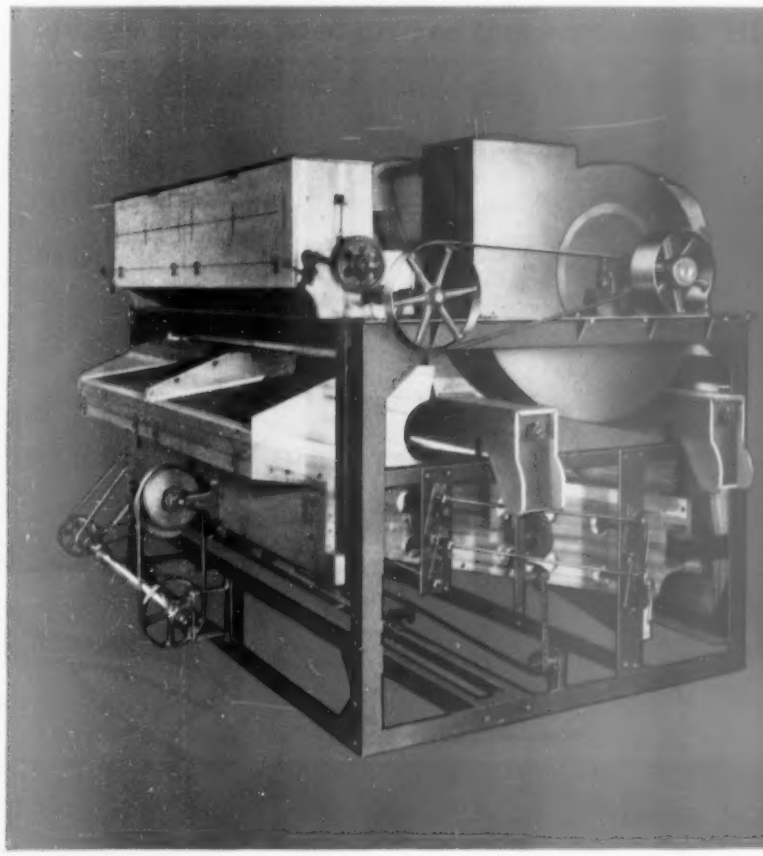
ATCHISON, KANSAS — Incorporation procedure has been completed by the F. A. Mangelsdorf Seed Co., Inc., here, dealers in seed, feed, grain and other agricultural products. F. A. Mangelsdorf is resident agent of the firm which has an authorized capitalization of $200,000.

TROPHY WINNER — J. E. Sams, vice president and sales manager of the Blatchford Calf Meal Co., is shown here presenting the Barwell annual salesmanship trophy to Rhett McNair, son of the award winner, J. E. McNair. Mr. McNair, who is the southwestern sales manager, was not able to attend the presentation because of illness. The award was made at Blatchford's annual national sales meeting held in Waukegan, Ill. The trophy, given in memory of John W. Barwell, former company president, is held by the winner one year. The winner also receives a $100 check. Mr. McNair also was winner of a sales managers' speech competition, along with Sam DeLuca, northeastern manager, and Hal Gillott, southeastern area.

Fort William-Port Arthur Grain Handlings Decline

WINNIPEG — Completed figures for the 1953-54 crop year show that unloads of all grains at terminal elevators at Fort William-Port Arthur for the 12 months totaled only 361,200,000 bu. compared with 532,200,000 the previous crop year. Shipments, according to the statistics branch of the Board of Grain Commissioners, dropped from 517,300,000 bu. in 1952-53 to 352,400,000 bu. in the crop year just closed.

A detailed review of lake shipments shows that the 1953-54 movement involved 1,388 separate cargoes—1,248 in Canadian vessels, 122 in U.S. boats and 18 cargoes in other foreign bottoms. Comparable figures for the record year of 1952-53 were 1,850 cargoes made up of 1,659 Canadian, 158 U.S. and 33 cargoes in other foreign vessels.



Eureka 3-Screen 2-Air
SUPER CLEANERS

Fifteen sizes to fit your every requirement in grain elevators, terminals, warehouses and processing plants. A cleaner that removes impurities from grain where combined air and screen separations are applied. Superb scalping and cleaning, uniform separation, large capacity, low operating cost, dependability and economy. More work per day . . . More work per dollar with Eureka Super Cleaners.

Our new, de luxe Catalog No. 180-3 on Eureka Super Cleaners and related equipment is just off the press. Richly printed in three colors with large illustrations of cleaners and screen arrangements. Complete operating specifications for every cleaning purpose are also included together with installation diagrams. Send for your copy now—at no cost.

MORE WORK PER DAY . . .
MORE WORK PER DOLLAR . . .

EUREKA-BARBEAU ECCENTRICLESS DRIVE

The sensational, NEW screen drive designed and engineered by S. Howes Company. Smooth in action and effortless in operation. Seven outstanding features make this New Drive the *top news* for Flour, Feed, Grain and Processing Mills. Barbeau Drives are made in 3 wheel sizes, each size includes a range of balanced weights for correct oscillation depending upon capacities of grain or other products being handled. Direct V-belt drive to weight-carrying wheel. Low power requirements. Entire unit completely enclosed and sealed. Once-a-year lubrication. Factory guarantee.

EUREKA

S. HOWES CO., INC. SINCE 1856
SILVER CREEK, N. Y. • LONDON, ENGLAND

MORE PIG RAISERS NOW FEEDING

Blatchford's
NEW PIG-PAB Pellets

Extra Sales for You with This Profitable, Fast Selling Pre-Starter Milk Supplement

YOUR CUSTOMERS GET . . .
- 40-50 lb. pigs in 8 weeks
- Easier transition to dry feeds
- Maximum antibiotics and vitamins
- Lower fiber content
- Pigs wean quicker

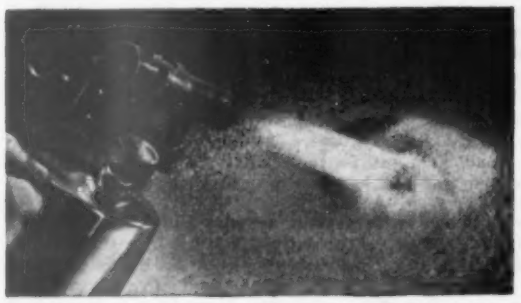
Ask Your Distributor For Pig-Pab!

Blatchford's

Main Plant & Offices WAUKEGAN, ILL. Midwest Division Des Moines, Ia. West Coast Division Nampa, Idaho

Type L Micratized Vitamin A—a fine, dry, free-flowing substance. Completely digestible. Includes money-saving 250,000 units per gram potency.

Pelleting pressures may change the shape or structure of other stabilized vitamin products, thereby affecting their stability, but Type L is unaffected by such physical stresses.



Heat may melt the active portion of other stabilized vitamin products. Type L will not melt or bleed even at high pelleting temperatures.

TAKE A GOOD LOOK AT NOPCO'S TYPE L MICRATIZED® VITAMIN A

It brings genuine vitamin stability to pelleted feeds

It is an entirely new product, made by an entirely new process and offered in potencies of 10,000; 20,000; and 250,000 units of Vitamin A per gram. It is far superior to anything else on the market in resistance to heat and pressure.

Take a look at the texture. It's a fine, dry, odorless, free-flowing meal which will not melt at high temperatures or break down under pressure.

You'll find Type L Micratized Vitamin A the one ideal fortifier for pellets, range cubes, and crumbles. For full information, send for the new edition of the Nopco Nutrition Guide.

NOPCO

NOPCO CHEMICAL COMPANY
Harrison, N.J. • Richmond, Calif.

Nopco Chemical Company,
100 Front St., Harrison, N.J.

Please send me the Nopco Nutrition Guide.

NAME_____

FIRM NAME_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

Advertisement

FEED For THOUGHT

Management in Selling

For maximum economic production, there must be a balance among breeding, management and nutrition. Progress in one of these fields requires similar improvement in the others.

Advances in swine nutrition have been exceedingly rapid in the last few years. It is now possible to wean pigs at one week and to obtain results far superior to the "natural" way. Some of these advances have caused sizeable headaches in the Feed Industry. ISC precreep feed is the current migraine. Most of the ingredients are exotic to feed manufacturing. Mixing is literally a mess. But it will give excellent results if it is properly mixed strictly to formu'a and if it is correctly used under proper conditions.

Splendid as these contributions in nutrition are, the emphasis the Station workers place on sound management practices is more important.

Observations on our own research farm have not always agreed with findings of some of these nutrition workers. We have been routinely weaning pigs at 3 weeks of age for two years, using a simple pig starter with ordinary ingredients. Under such conditions, our pigs show no preference for pellets, or for rolled oats or sugar in the starter. If a litter is slow to start eating the creep-fed starter, a little syrup is dribbled over the feed and the pigs are "dunked" mouth first to get a bite. Nor do our pigs respond to high antibiotic levels despite our overcrowded conditions and our share of disease and parasites. There is no doubt but that pigs generally prefer rolled oats and sugar in their feed, prefer pellets to mash, and get off to a better start on fairly high antibiotic levels. The results on our farm can only be ascribed to the care and skill of the personnel—to their "pig-sense."

The feed manufacturer who adopts these advances in nutrition can expect a high percentage of dissatisfied customers unless his service program results in simultaneous adoption of the necessary management practices. The differences among top quality feeds of different brands are minor, nutritionally. The manufacturer with the service program which results in maximum adoption of sound feeding and management practices by customers will obtain superior results and hence volume of business.

Regardless of the kind of product, the trade goes to the firms which sell quality with service to help the customers get the best results.

Dr. S. Wilgus

PETER HAND FOUNDATION
1000 W. North Ave. Chicago 22, Ill.

JOE BROOKS

(Continued from page 49)

we can drink for 10¢.' The farmers don't order regular plate lunches anymore, where the drink comes with the price. They just eat little stuff and come over here and drink a lot of milk. My coffee sales, my dinner plate sales are goin' way down, Joe. All on account of you selling milk. Why do you do it?"

Joe whistled. "I didn't know that, Happy. I put in that 10¢ milk offer when I saw how much milk was sold at Wisconsin county fairs on that basis. I asked you to do this, Happy, and you turned me down. Then I went to the other restaurant owners and they turned me down flat, too. What could I do? I went out and bought an old refrigerator and some paper cups. And I am selling the milk on that basis to farmers and their families when they come in to shop. And even the townspeople come in to drink two and three glasses at a time. I'm just about breaking even."

"But why?" asked Happy peevishly. "Why can't you stick to selling feed and leave milk alone. I don't sell feed, do I? Or maybe I should put in a stock of it."

A Campaign for Milk Sales

Joe sighed patiently. "Happy, I told you why I had to sell milk. People gotta be trained to drink more milk than they ever drank before. Farmers need the extra business, people need the better nutrition they get from good milk and I need more feed volume. If every feed dealer in the nation did what I'm doing there would be a lot of people trained to drink more milk. Why one man came in here on a hot day last week and drank six glasses. That's a record around here so far."

Happy frowned. "Do the farmers need the extra business that much, Joe? Really?"

"They sure do, Happy. Why if the restaurant owners, the feed dealers, the soda fountains and the filling stations would take this idea and give people all the milk they can drink for 10 or 15¢, milk sales would boom. We can and must help the farmer that way. We can't let the soft drink makers and the coffee brokers run away with part of the farmers' market."

Happy digested this information. He smiled and there was a flash of his gold teeth. "Joe, if I let folks drink all the milk they wanted for 10¢ one day a week would you quit selling it?"

Joe shook his head stubbornly. "No, one day a week won't do the job."

"Not even for an old pal would you do it?"

Once more Joe shook his head. "No, the farmer is my pal, too. I've got to think of him."

Happy chewed his lip. "Well—two days then. I'll sell milk for 10¢ for two days a week—all they can drink."

Joe thought about this fact. "Now, we're getting warm, Happy. I'm glad to see you changing your mind. Let's do this: give away milk on this basis three days a week, and I'll split any loss with you provided you put up a big sign in your cafe telling folks why they should drink lots of milk every day in the year—to improve their health and to help the farmer."

"I should lose money on the deal yet, Joe," gasped Happy. "I'd like to break even at least."

"Happy," said Joe eagerly. "I'll give up selling milk on that basis, give up the restaurant license I had to take out to do it, and you'll get all the publicity. Why the farmers around here will think you're a great guy to want to help them, maybe even better than Secretary Benson or even President Eisenhower. How would you like that?"

"Gee," said Happy, quite impressed. "I wish I could look ahead like

(Continued on page 51)

RINGING THE cash register

MERCHANDISING HINTS FOR THE FEED RETAILER

Credit Stop

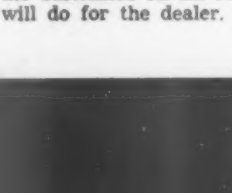
Most feed dealers do not have sufficient volume for a full time credit and collection manager. For this reason, employees often must pass on credit in the absence of the owner. A safe practice is to attach "credit stopped" stickers to the ledger sheets of seriously delinquent accounts. They give notice to all employees to refuse further credit. If the firm is a member of a credit bureau it may be able to provide such a sticker, or perhaps a statement ordering a suspension. In this manner the credit bureau's wording will provide added effect on the customer when further credit is not allowed.

Big Displays Are Noticed

Customers are attracted most easily by displays that are big, attractive, colorful and have a punchy selling message. Most manufacturers, including one large feed manufacturer, concentrate on fewer and better store displays. They also make their displays sturdy enough to last for several weeks. Concentrating on one or two feature displays impresses the customer more than having half a dozen, all fighting to attract the customer's eye, the net result being that the customer doesn't remember what any one of them is trying to tell.

Good Will Dinner

One feed dealer stages an annual good will dinner for farmers in a certain township, rotating the neighborhood townships yearly. At his last dinner he had a 90% turnout (125 farmers and their wives). Farmers are invited by letter and a return postal card is enclosed. Following the dinner he shows a film on how feed is made, his own slides showing how poultry and livestock eating balanced rations outgain those fed on farm grains alone. He said he keeps the educational portion of the program under an hour. The dealer reports that his expenditure of about $2 a person (mainly for food) nets him some solid good will he cannot gain otherwise. Besides increased business he says he gets numerous calls to show the feed films and slides at meetings of farm groups and gains additional good will and business.



Prepackage Oats, Corn

Prepackaging and self-service have become familiar merchandising practices, especially in grocery stores. Feed dealers ought to keep abreast of these trends and adopt prepackaging and self service wherever possible. One dealer states that he prepackages oats and cracked corn in 50 lb. and 100 lb. bags and has had quite a demand for them. Many customers, he says, are in a hurry to buy, load and get to their next stop. For them prepackaging and self service are convenient time savers.

Incentive Plan

A feed dealer who says he employs only high caliber men with incentive to help each other for the general promotion of the firm, maintains that his bonus plan has a great deal to do with a steadily increasing volume and profit. The bonus plan is based upon the overall earnings of the company. Ten per cent of the net earnings of the firm are put into an employee's fund. The fund is distributed on a percentage of salary basis to all employees who have been with the firm two years or longer. The plan has paid as low as 2% of an employee's annual wage and as high as 17.8%.

Holiday Ad

Now is the time to start planning a holiday newspaper ad with pictures and personal greetings from every employee in your store. It adds a personal touch to your Christmas or New Year advertisement. Your customers will notice the pictures and many of them will mention to you that they saw the ad with the pictures.

Give Him Training

The dealer who is employing an inexperienced outside salesman should first give him inside training in feed salesmanship. One dealer has his outside man spend three months in the store and on delivery trucks before placing him on a route. The three-month period enables the new man to become acquainted with the store's products, programs and customers and he learns helpful selling pointers. In addition the feed manufacturer's representative can usually arrange to accompany the new employee one day a week for several weeks or perhaps even more. The better equipped the salesman is to service the customers on his route the better job of selling he will do for the dealer.

FOR BETTER FEEDS...

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(PATENT APPLIED FOR)

Because...

Lime Crest Trace-Mineral Pre-Mixes are especially formulated for today's feeds. They are made by an exclusive blending process. Their quality is ensured by laboratory control. They will help you produce higher quality feeds.

Lime Crest pioneered in the use of manganous oxide and ferrous carbonate in trace-mineral pre-mixes . . . originated the principle of using compounds of manganese, iron, copper, and cobalt that are soluble in the gastric juice but *not* soluble in water. Lime Crest continues dedicated to improving trace-mineral pre-mixes.

Lime Crest has prepared an interesting brochure entitled "A New Key to Feed Efficiency". It describes the advantages of trace-mineral pre-mixes made according to the new principle. Send for a free copy today.

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are made by Limestone Products Corporation of America

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In Canada: The Ash Chemical Company, Board of Trade Building, Montreal 1, P. Q.

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Antibiotics will not cure CRD

THEY do have an important place in poultry diseases—but their limitations must be understood. Antibiotics fed to poultry do not destroy the organism causing chronic respiratory disease. Leading poultry pathologists have been telling us that for some time now.

Used properly, antibiotics are effective in fighting the secondary bacterial invaders that move in on respiratory conditions. They can be effective in stimulating appetite. They can be effective in controlling many cases of enteritis, they can shorten the time a flock suffers from disease.

No antibiotic is successful in every case. Many failures attributed to the antibiotics are in fact due to improper diagnosis, to the complexity of poultry infections and to treatment started so late as to be of little or no value.

NEW CSC PENLINE-200 PROCAINE PENICILLIN

fed at high levels saves you

$5.00 to $12.00

PER TON OF FEED!

SECONDARY INVADERS

The secondary invaders that follow diseases of the respiratory tract are the real culprits in the broiler pen and laying house. Here is where your high-level antibiotic feed can do a real job for your customers. CSC Procaine Penicillin as Penline-200 fights secondary invaders in poultry at lowest cost.

APPETITE STIMULATION

One of the earliest indications of the onset of diseases is reduced feed intake. CSC Procaine Penicillin helps stimulate appetite in poultry and helps birds return to full feed.

ALL FOUR ANTIBIOTICS EQUALLY EFFECTIVE

All four—penicillin, bacitracin, and the tetracycline antibiotics at high levels, show comparable results on a gram for gram basis. In test after test in the field with flocks totalling hundreds of thousands of birds—CSC Penline-200 fed at high level did a job unsurpassed by any other antibiotic in reducing secondary infection, stimulating appetite, hastening recovery and speeding more birds to market or back to egg production.

PENLINE-200 IS THE WAY TO ASK FOR MONEY-SAVING PENICILLIN

High-level penicillin means CSC Penline-200. Penicillin should always mean CSC to you. For CSC was one of the first large-scale commercial producers of penicillin and now is first with a penicillin product developed especially for high-level use in feed. Penline-200 is stable and stores well.

IT COMES TO YOU IN EASY-TO-CALCULATE POUND PACKAGES

CSC Penline-200 contains 200 grams of procaine penicillin per pound. It was designed to simplify your high-level arithmetic. For a level of 200 grams, just add a pound of Penline-200 per ton. For a level of 100 grams, you can add one pound per two-ton mix. Available in 5, 10, 25, 50 and 100-pound vinyl-lined fiber drums. Write today on your company letterhead for detailed facts, proof of performance and economy and for a sample of CSC Penline-200 for high-level feeding at low-level cost. Animal Nutrition Sales Dept., Commercial Solvents Corporation, 260 Madison Ave., New York 16, N. Y.

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* U.S. Patent No. 2496634 Reg. Trade Mark

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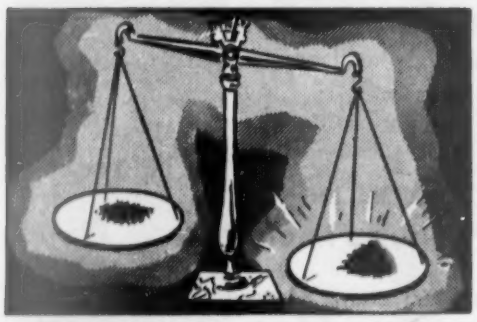
Nutritionists agree that fat is the desirable vehicle for Vitamin A, a fat-soluble vitamin. Fat protects Vitamin A in the digestive tract and facilitates absorption of the vitamin. Yes, even the material used to seal in this important vitamin is a high-caloric form of nutrition. Does your present product furnish fat-soluble Vitamin A dispersed in an absorbable fat medium? If not — Why not?



PERMADRY tips the scale in your favor.

2 THE ONLY DRY VITAMIN A PRODUCT IN BEAD FORM USING HYDROGENATED EDIBLE FAT AS THE SEALING-IN MATERIAL SUPPLEMENTED WITH FAT-SOLUBLE ANTIOXIDANTS AND AN EDIBLE EMULSIFYING AGENT.

This means stable Vitamin A all the way through — when you obtain it, even after prolonged storage in your feeds (or feed concentrates). All this with the utmost in availability and feed efficiency. Are you sacrificing feed efficiency for stability in the product you are now using?

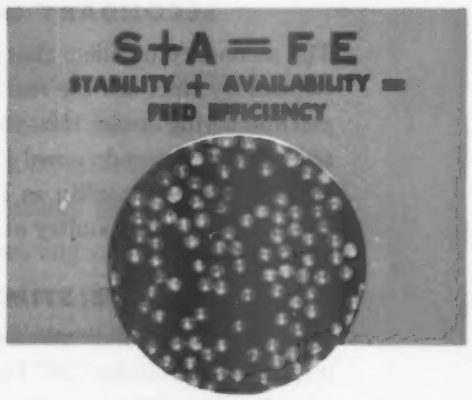


PHOTO-MICROGRAPH of PERMADRY BEADS (magnified)

3 THE ONLY DRY VITAMIN A PRODUCT WITH NUTRITIONAL ACTIVITY FAR IN EXCESS OF THAT FOUND BY PHYSICO-CHEMICAL TESTS.

The Vitamin A in PERMADRY is sealed-in in such a manner as to protect it during the early processes of digestion and yet it is liberated and completely available at the proper site for absorption in the gastro-intestinal tract, as evidenced by liver storage experiments. What is the nutritional story behind the product you are now using?

4 THE FIRST AND ONLY DRY VITAMIN A PRODUCT TO GUARANTEE THE SAME VALUE BY SPECTROPHOTOMETRIC and COLORIMETRIC ASSAY.

Physical and chemical tests have limitations. There are other materials which behave like Vitamin A in the spectrophotometric (absorption of light at 325 mu.) test. There are other materials besides Vitamin A which react with antimony trichloride to give a blue color. There is only one material — *nutritionally active Vitamin A* — which gives the same value by the two test methods. PERMADRY Vitamin A, at all times, assays out to the same value by these two unrelated test methods. Will the Vitamin A product you are now using give the same value by spectrophotometric and colorimetric assay, testing before and after storage of the product?

"Spec" A Units? Colorimetric A Units? What about Biological Units?

Write us for a compilation of the results of tests on PERMADRY made at leading universities and independent, nationally recognized laboratories.

FOR BEST RESULTS, IT PAYS TO USE PERMADRY

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Merck Introduces New Treatment for CRD

RAHWAY, N.J.—The chemical division of Merck & Co., Inc., has announced the development of "Vetstrep Spray" for treating chronic respiratory disease of chickens.

The newly developed product is supplied in a 12-oz. aerosol pressurized container that sprays the antibiotic dihydrostreptomycin directly into the quarters of the infected poultry. The birds inhale the medication and Merck & Co. technical personnel claim that the antibiotic, by coming into direct contact with the infected respiratory areas, greatly reduces losses in poultry flocks affected with CRD.

One container is sufficient to treat 100 birds in about 30 seconds at a cost of about 2¾¢ per bird. The product is being made available to wholesale distributors and to veterinary product manufacturers for sale under the Merck trade name, "Vetstrep Spray," or under their own trade names.

Announcement of the new product was made at a dinner held at Salisbury, Md., Oct. 19, attended by 140 poultry specialists from the Eastern Seaboard. Dr. D. E. Fogg, a member of the veterinary research staff of Merck & Co. presented research data to substantiate the company's claim of the effectiveness of the new type of medication.

Dr. Fogg described the method of application and used projection pictures to illustrate his discussion.

CUSTOMERS WANT TO SEE

Research done in New York on consumer buying indicates housewives like to see the eggs they buy. They prefer cartons with more open spaces so eggs can be seen.

JOE BROOKS

(Continued from page 46)

you, Joe. Guess I'll even nominate you as president of our Lion's Club, the way you talk."

"Then it's a deal, Happy? asked Joe.

"Sure, it's a deal," responded the happy cafe owner. "Gee, I feel a lot better now, Joe. I had a feeling it would work out all right. This sign!" He held it up. "I'll tack it up right near the coffee urn—no, I mean the milk dispenser where all the farmers can see it, and maybe they'll get the idea of buying more feed from you."

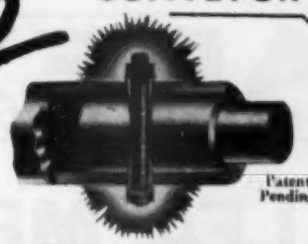
"Good, Happy. That'll be swell. And you'll get extra business from farmers, too, by helping them on this milk deal. I know it."

With one hand on the doorknob, Happy paused. "Joe," he half pleaded, "we're going deer hunting again together this year, ain't we? You're not gonna hold anything against me for this, are you?"

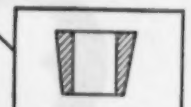
Joe laughed, "You bet we're going deer hunting, Happy, if you can convince my wife that I'm tired and need a change of scene and a rest."

Happy's gold teeth flashed. "Leave it to me, Joe. We're as good as on that hunting trip right now." Whistling, he strutted off through the retail store and outdoors.

Stop— CONVEYOR BACKLASH



Patent Pending



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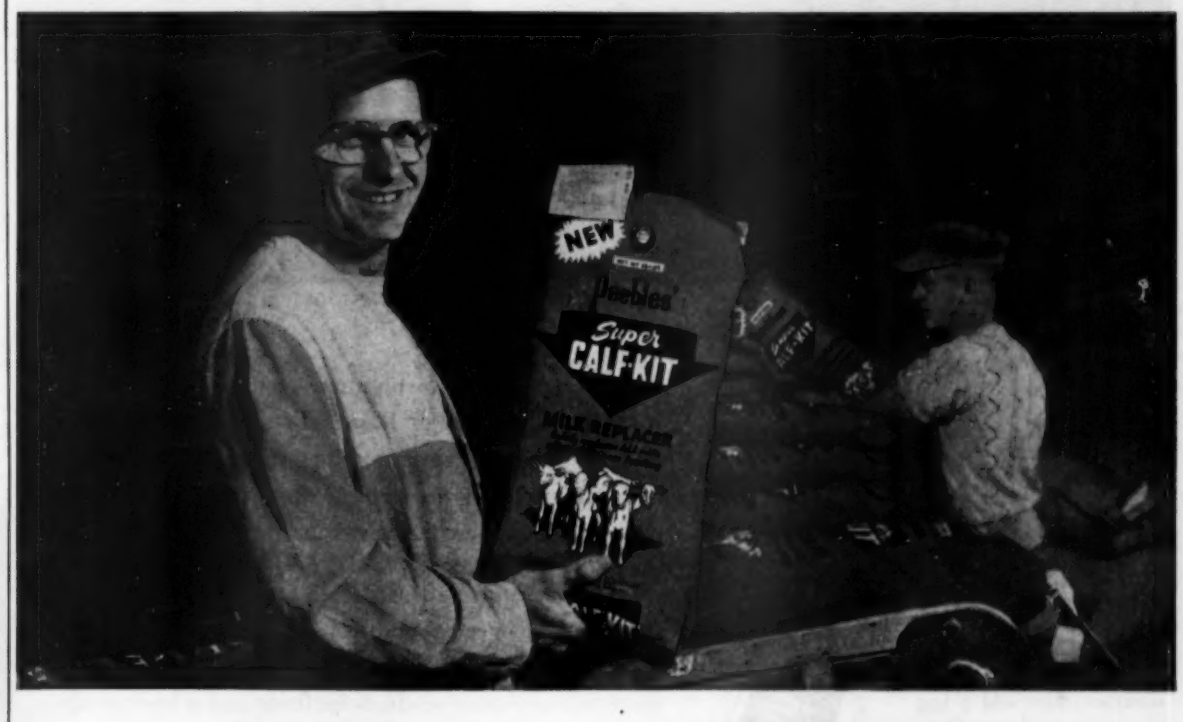
THOMPSON-HAYWARD CHEMICAL CO. KANSAS CITY 6, MO.

Announcing an entirely new kind of Calf Milk Replacer



Peebles' Super CALF-KIT WITH ANTIBIOTICS

Thermogized to raise bigger calves and boost your sales

PEEBLES' Super Calf-Kit will be big news at your sales counter this fall and winter. It's a new kind of milk replacer — produced by a new process called Thermogizing. This means bigger calves for your customers — bigger profits for you. Here's why:

NEW SUPER CALF-KIT

1. Greatly reduces the problem of calf scours.
2. Speeds growth by up to 25% over fresh milk feeding alone.
3. Safely replaces every drop of fresh milk after colostrum.
4. Makes feeding easier. Super Calf-Kit mixes readily, stays in solution, doesn't clog nipples.

MOVES FAST! Nationally advertised — and a free consumer premium in every bag.

Thermogizing combines heat and pressure to break down the components that go into Super Calf-Kit. This process "unlocks" new nutritional power that benefits a young calf's sensitive digestive system.

It extends the feeding value of both the milk and vegetable nutrients. Reduces digestive upsets. Promotes silky hair coats. Along with guaranteed effective levels of antibiotics, Thermogizing helps eliminate the cause of scours. And Super Calf-Kit is high in fat for extra energy and fine condition.

Order your supply of new Super Calf-Kit now. Both you and your customers will profit.

Write Appleton, Wis., for the name of your nearest distributor

New formula
New process
New results
New scours control
New premium idea
New profit mate for your calf starter line

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Do you know

the history of molasses?

***By* Webb Garrison**

OWNERSHIP of a "sweet tooth" is not a modern development. Soldiers who fought under the Caesars were fond of sweets—but seldom had a taste. Dates constituted the chief source of sugar manufactured in the Roman Empire, and the refined stuff was scarce and costly. Even the liquor drawn off in making sugar was highly prized. Since it was somewhat similar to honey, or "mel," Romans called the sticky stuff mellaceum.

Passing through Portuguese and greatly modified in spelling, the ancient term entered English as molasses. As late as the 16th century, dates provided the chief raw material. Europeans soon discovered an inexhaustible new source of sugar in the sweet cane grown by natives of the New World. Sugar provided almost as rich loot as gold, and mills multiplied in America. Though beginning to be more plentiful, molasses was still too precious for any but table use.

Only when modern refinery methods made molasses abundant did the raw sweet become available as stock feed.

EDITOR'S NOTE: Feedstuffs presents here another in a series of articles dealing with the origin and background of terms associated with the feed industry.

North Dakota Feed Men To Meet in Fargo Nov. 17

FARGO, N.D. — A feed dealers' conference, sponsored jointly by the North Dakota Agricultural College and the North Dakota Division, Northwest Retail Feed Association, Inc., will be held at Fargo, N.D., Nov. 17. L. A. Hansen, secretary of the Northwest group, made the announcement.

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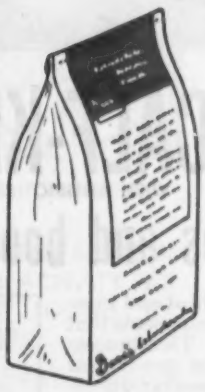
Buying your vitamins, trace minerals and antibiotics premixed by Dawe's Prescription Service eliminates the errors and losses caused by unskilled labor handling costly materials in minute amounts. Yet, you pay for ingredients only. Think of the convenience and savings!

Handy batch-size bags simplify final mixing—assure accuracy. Just add a bag of your special premix to each batch of feed, that's all. Easy to handle, easy to use. More savings! More convenience!



One order replaces scattered buying. One product replaces many individual ingredients . . . eliminates shortages and unbalanced inventories. Automatically stops chief causes of waste and shrinkage.

You center responsibility for stability and potency of your fortifier . . . assure yourself and your customers of uniform, generous fortification . . . hold old customers, make new ones. You have more time to concentrate on the main job—sales. Any way you figure, Dawe's Prescription Service means an improvement in your business operations.

Real savings on feed fortification operations are available to your company through Dawe's Prescription Service. This valuable service enables you to buy your vitamins, trace minerals and antibiotics *custom-blended* to your own prescription and *custom-packed* to meet your own requirements. And it can easily cost you much less than what you are now doing!

Dawe's, the pioneer of multiple vitamin fortification, is your best source of custom blends. As the world's oldest and largest specialists in vitamin products for feeds, and as basic producers of both vitamins and antibiotics, Dawe's offers you the widest selection of ingredients and the most complete service, including helpful cooperation with your own nutrition department.

Any combination of vitamins, trace minerals and antibiotic are available through Dawe's Prescription Service. Your company can save money and increase efficiency through this time-tested service. Send the coupon now. There is no obligation.

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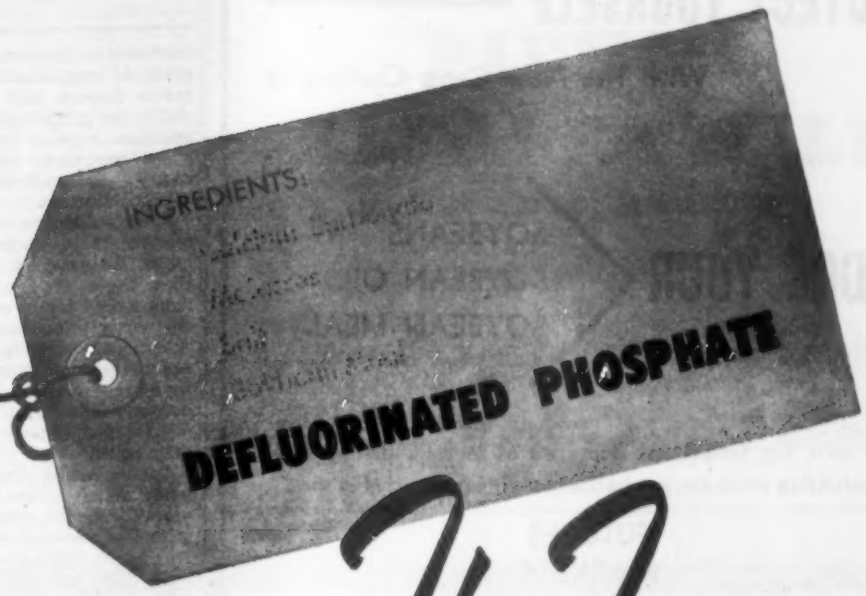

The Tag

THAT SELLS MORE FEED

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CORONET DEFLUORINATED PHOSPHATE,

with virtually 100% proven* biologically available phosphorus, gives your feed formula valuable sales appeal.

LOWEST COST AVAILABLE PHOSPHORUS **— Since all of the phosphorus in Coronet Defluorinated Phosphate is spontaneously available to the animal, you waste no money on an inert, unusable element. This means that you receive the benefit of phosphorus nutrition at lowest cost per unit, delivered.**

FLUORINE **— Coronet Defluorinated Phosphate meets the fluorine/phosphorus ratio specified in the American Feed Control Officials' definition of defluorinated phosphate. This fluorine level is well below that approved for phosphatic feed supplements.**

It will pay you to investigate Coronet Defluorinated Phosphate before registering your feed ingredients for the coming year. We will be happy to furnish prices and figure delivered costs to you.

Coronet Defluorinated Phosphate is supplied in two grades to meet your feed supplement requirements:		
	17% P Grade	14.5% P Grade
Phosphorus, Total	17% min.	14.5% min.
Phosphorus Available in 0.4% HCl	16.8% min.	14.3% min.
Calcium	34.0% min.	34.0% min.
Fluorine	0.17% max	0.145% max

**Complete report available upon request*

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*Feed industry readers who *classify themselves* as feed manufacturers rate Feedstuffs as the publication giving them the "widest coverage and most up-to-date information" on advertised products.

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TEXAS FEED CONFERENCE

(Continued from page 33)

production, there should be a program of immunization against Newcastle disease and infectious bronchitis, the proper use of coccidiostats, adequate organic floor litter and floor space per bird. He added that he strongly approves the continuous use of coccidiostats.

J. P. Delaplane of the department of veterinary bacteriology and hygiene, Texas A. & M. College, said that there are no recognized substances capable of overcoming any of the virus infections of poultry, but that benefits can be derived from the use of antibotics as a good nursing measure, tending to enhance feed consumption, rather than having any destructive activity against the disease agents.

In discussing the relation of the veterinarian to the feed manufacturer, W. W. Armistead, dean of the school of veterinary medicine, Texas A. and M. College, said that veterinary medicine and animal nutrition are so interdependent that full cooperation is not only logical but is a "must" if both fields are to progress to their fullest extent. He emphasized the indistinct line that separates the point where nutrition stops and disease begins.

Swine Nutrition

New developments in swine nutrition were discussed by Dr. Beeson and L. W. Carpenter, Executive Director of the Distillers Feed Research Council, Inc.

Dr. Carpenter said that it is likely that some of the unidentified factors required by chicks will also be required by swine, and that it is important that modern swine diets contain not only adequate amounts of known nutrients, but also have sources of the unidentified factors.

The speakers reviewed the considerable amount of work that has been done lately with pig starters and prestarters. Current evidence, he said, suggests that three weeks is a better time than seven days to wean pigs, and some studies have shown a lower cost of pork production per 100 lb. when pigs are left with the sow. In some studies at Minnesota, he said, cost of $10.96 per 100 lb. of pork was attained when pigs were left with the sow, as compared with a cost of $13.50 when pigs were weaned at the age of three weeks.

When antibiotics are present in feed, the protein level of the feed can be reduced without an adverse effect on growth, Dr. Carpenter indicated. Recent experimental results have demonstrated that the dietary protein requirement of growing swine, weighing 75 to 125 lb., is about 14%.

Dr. Beeson discussed the quantitative requirements of the individual amino acids in swine rations, and predicted that some day feed men will be as familiar with amino acids as they are with vitamins today. There are ten essential amino acids for the pig, he said, listing them as arginine, histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan, and valine. The quantitative requirement of swine for each of these is as follows:

Amino Acid:	Protein level fed, %	Amino acid requirements % of total ration	% of protein in ration	Calculated amino acid requirements for total ration 18% protein level
L-Arginine*	11.3	0.20	1.77	.32
L-Histidine*	13.2	0.40	3.03	.54
L-Isoleucine	22.0	0.70	3.18	.57
L-Leucine*	13.2	0.80	6.06	1.09
‡L-Lysine	23.8	1.00	4.20	.76
‡DL-Methionine†	31.0	0.60	2.86	.51
DL-Phenylalanine	13.0	0.46	3.54	.64
‡L-Threonine	13.2	0.40	3.03	.54
DL-Tryptophan	24.5	0.20	0.82	.15
L-Valine	12.8	0.40	3.13	.56

*This level is adequate but minimum requirement has not been established.
†Cystine can replace one half (0.3%) of the methionine requirement.
‡Similar but slightly higher requirements have been presented on lysine (5.5% protein) by Brinegar et al. (1950a) and for

Positively the Finest *in Feed Merchandising say KASCO Dealers*

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methionine (3.2% protein) by Curtin et al. (1935b). Baby pig requirement for threonine is 3.6% of protein (Sewell et al., 1953).
†This is assuming that the amino acid requirement is directly proportional to the protein level fed (Brinegar et al., 1950a).

In most swine rations the borderline or limiting amino acids are tryptophan, lysine, and occasionally methionine. He said that corn-soybean meal diets are borderline in methionine, corn-tankage rations are deficient in tryptophan. Corn-meat scrap rations also are lacking in tryptophan. Corn-linseed meal combinations are deficient in lysine. Corn-fish meal diets are low in tryptophan. Corn and cottonseed meal diets are low in lysine. All these are based on an 18% protein level.

Eventually, Dr. Beeson said, amino acid supplementation will be practical in swine diets. Except for methionine, such supplementation is too expensive now, but with large scale demand the cost of the other amino acids will be greatly reduced, he predicted. He also pointed out that it is not true that a pig cannot use non-protein nitrogen. If all of the amino acids are provided in adequate supply, swine can use urea.

Dairy Feeds

Formulation of dairy feeds should take account of three types of conditions, I. W. Rupel, head of the department of dairy husbandry, Texas A. & M. College told the meeting. When high-protein roughages are available, the dairy balancer should be a concentrate mixture containing as little as 12 to 14% protein. When pasture and forage conditions are only fair, averaging about 10% protein, the concentrate dairy mix should be in the range of 16 to 18%. When forage is poor, generally in the range of about 6% of protein, a concentrate for proper balancing would need to be about 20% protein. Feed manufacturers should make these three standard mixtures available and the dairyman should be alert enough to select those which meet his own needs best.

Generally speaking, Dr. Rupel said, the feed industry is doing a good job in the formulation of feeds, although there may be some tendency to include too much of high fiber feeds in formulas running to the lower levels of protein.

George K. Davis, of the University of Florida, pointed out that the interest in non-protein nitrogen in dairy rations is extensive. Urea and ammoniated by-products are valuable sources of nitrogen for dairy cattle when they are economical and used in limited quantities, he said. While low levels of soluble carbohydrates appear to increase the utilization of non-protein nitrogen, higher levels appear to have the reverse effect, he reported.

Continuous feeding of thyroprotein has definite disadvantages, Dr. Davis said. But the short time feeding of thyroprotein at special periods may have substantial economic advantages. Continuous feeding tends to lower the efficiency of feed utilization, lowers butter fat content, tends to increase mortality of calves and develops increased susceptibility to disease, he said.

There is no great danger to dairy cattle from the proper use of insecticides such as toxaphene, chlordane and aldrin. It would require a level of about 160 parts per million of these insecticides in feeds to produce one part per million in milk. The chances that such a concentration would occur are practically nil,

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U.S.I. FEED NEWS

November ★ A SERIES FOR SCIENTISTS AND EXECUTIVES OF THE FEED MANUFACTURING INDUSTRY ★ 1954

Bacitracin-Penicillin Spare Folic Acid

During recent nutritional studies on the vitamin sparing effects of antibiotics, improved growth in chicks was obtained when a combination of bacitracin and penicillin was added to diets low in folic acid. It is believed that this increased growth may be due to the appearance of intestinal coliforms which produce increased amounts of folic acid. Although the vitamin-sparing effects of antibiotics were clearly established by even earlier research, this study may help to explain the manner in which antibiotics spare vitamins for the chick.

Both these antibiotics are available from U.S.I.—individually or in combination with each other. They are also available as special mixes in combination with other vitamins or in higher potency, if desired.

Use of Low Cost Bulk Feed Ingredient Gaining in Popularity

According to feed manufacturers who have used it, a new low cost source of carbohydrate for cattle feeds is proving a satisfactory substitute for wheat bran and other bulky ingredients. It is reportedly gaining in popularity throughout the East. Its unusual absorptive qualities for liquids such as oils and molasses also make this material especially suitable for use as a carrier for vitamin supplements.

This product is a dry, free-flowing, well ground material with a pleasant odor. It is available for shipment to East Coast points at attractive prices. Technical information, and prices can be obtained by writing to Editor, USI Feed News.

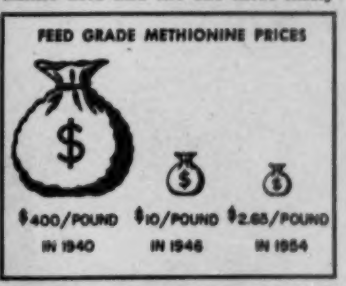
Increased Demand for Methionine Foreseen: Price Cut Spurs Use in Feeds for 1955

The price of DL-methionine for feed use has been reduced more than 10% by U.S.I. – pioneer commercial producer of this essential sulfur-bearing amino acid. For those who have used methionine, the new price reduction makes it even *more practical and profitable than ever before* to use this essential amino acid in feeds. For those who have not used it, the new low price presents an excellent opportunity to offer customers the feed efficiency and growth advantages of a methionine supplemented ration. As a result, much wider use of methionine is foreseen — not only in poultry rations but also in feed for swine, dogs, and fur-bearing animals.

Improves feed efficiency

Experiment station tests and reports from commercial poultrymen have proved that the addition of methionine to a ration produces increased returns over feed costs by improving growth and feed efficiency. In addition, methionine supplementation promotes better feathering, produces greater uniformity of finished birds. In today's highly competitive market these advantages of methionine-fortified feeds can be the difference between profit and loss.

Since DL-methionine is an essential amino acid and the one most likely to be critically deficient in starting rations, it should always receive special attention in poultry feed formulations. This is particularly true when substituting one feed ingredient for another — using milo in place of corn, for example. Since the amino acid content of the two ingredients may differ and result in a deficiency, the methionine content should always be watched carefully when making substitutions.



The new low price makes it more profitable and practical than ever before to offer your customers the growth advantages of methionine supplemented feed.

Pioneer producer

U.S.I.'s price reduction is the latest of many in the development of commercial methionine production, toward which U.S.I. took the first steps in 1940. Not long after this U.S.I. pioneered the first large scale pilot plant operation for methionine and announced commercial availability at a price of about $10 per pound. Until then methionine had been considered a rare chemical, selling for $400 per pound. Today, at a fraction of its original cost, it is a common and valuable feed ingredient expected to find even greater utility at the more attractive price.

As the first industrial producer — *the pioneer producer*—of DL-methionine, U.S.I. has had long experience in the manufacture and development of this essential amino acid. Plan now to contract for your supply of DL-methionine from U.S.I. in 1955 . . . use U.S. DL-methionine to formulate feeds of improved efficiency — feeds that will speed growth, reduce mortality, and provide added financial return to your customers.

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- SPECIAL LIQUID CURBAY molasses distillers condensed solubles
- VACATONE® 40, molasses distillers dried solubles
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he said, because under present practices the development of a concentration of 20 parts per million is very high.

Turkeys

The problem of fertility and hatchability has long been a headache for turkey raisers. Studies of J. R. Couch and R. L. Atkinson at Texas A. & M. College on this problem were reported to the conference.

They said that it is probable that the decrease in hatchability which usually occurs during the latter part of the laying season in most turkey flocks may be due to a depletion of the body stores of the hen of vitamin E and unidentified hatchability factors, since such substances are gradually removed from body stores and placed in the eggs. This is particularly true in those instances where the growing and laying rations do not contain adequate quantities of such factor sources or where the quality of such factor sources may be poor.

Recent work at Texas A. & M. has shown that hatchability may be improved by the addition of vitamin E to an all-vegetable protein ration containing no alfalfa, but supplemented with sources of unidentified factors. Another study showed that supplementation of an all-vegetable protein diet with 5% dehydrated alfalfa leaf meal and sources of unidentified factors had no effect on hatchability between the first and eleventh week. Supplementation of the basal ration with 5% dehydrated alfalfa leaf meal resulted in an increase in hatchability of 25% during the eleventh to seventeenth week. Supplementation with 5% condensed fish solubles, in addition to the alfalfa meal, resulted in an additional increase in hatchability of 25% during the same period.

Caged Layers

Dr. G. F. Combs, in a discussion of the nutrition of caged layers, said it is likely that the levels of certain nutrients should be slightly higher in the rations for caged layers, which cannot obtain nutrients from litter and which are kept at high producing levels by culling. Furthermore, keeping hens in cages magnifies the effects of such environmental stress as temperatures and the like. He gave the following suggested minimum levels for caged layers (all mash basis):

Suggested Minimum Nutrient Levels in Practical Rations for Caged Layers (All-Mash Basis)

Prod. energy, Cal./lb.	900
Crude protein, %	16
Crude fat, %	3
Calcium, %	3.25
Phosphorus:	
Total, %	0.75
Available, %	0.6
Salt, iodized, %	0.5
Manganese, mg./lb.	15
Vitamin A, IU/lb.	3,500
Vitamin D, ICU/lb.	340
Riboflavin, mg./lb.	1.3
Pantothenic acid, mg./lb.	3
Choline, mg./lb.	450
Vitamin B_{12}, mcg./lb.	1
Niacin, mg./lb.	15
Folic acid, mg./lb.	0.2

Dr. Combs said that pelleted feeds or high-energy all-mash feeds are needed to insure an adequate feed intake for high egg producers. When the energy level of the feed is increased, the levels of protein and other nutrients also should be increased proportionately. Each pound of all-mash ration for layers should contain approximately 900 calories of productive energy and the crude fiber level should not exceed 3 to 5.5%. Higher levels of fiber may be used when feeds are pelleted, he said. Higher levels of protein are especially valuable in early days of laying, when the birds are still maturing.

Surplus fats added to all-mash rations improve feed efficiency and body weight maintenance of hens at levels up to 5%, the speaker said.

Dog Foods

In a comprehensive discussion of the nutritional requirements of the dog, A. E. Schaefer of E. R. Squibb & Sons listed the following as the most common mistakes of the dog food manufacturer in his formulas:

1. The manufacturer is paying a high price for some specialized ingredients sold to him on the basis of a claim having no foundation.

2. Too much starch in the form of raw cereals is included in the mixture.

3. The mixture is too low in some of the essential vitamins and poor grades of ingredients are used.

4. A needlessly complex mixture containing too many items.

5. Lack of palatability, a subject on which there is much difference of opinion. In general, those items ranking high in palatability to the dog are fish meal, liver meal, meat scraps and corn flakes.

Ingredients

A discussion of the use of distillers feeds was given by Dr. Carpenter, who said these products have an important place in feeds for all classes of livestock and poultry. In many cases, he said, distillers dried solubles can be used to replace more expensive feeds. The recommended levels of distillers dried solubles for chickens and turkeys he placed at 50 to 100 lb. per ton of complete feed and 100 to 200 lb. per ton of concentrates. The best levels for pig starters are 50 to 100 lb. per ton of creep diet and 100 to 400 lb. per ton of protein supplements. Calf starters

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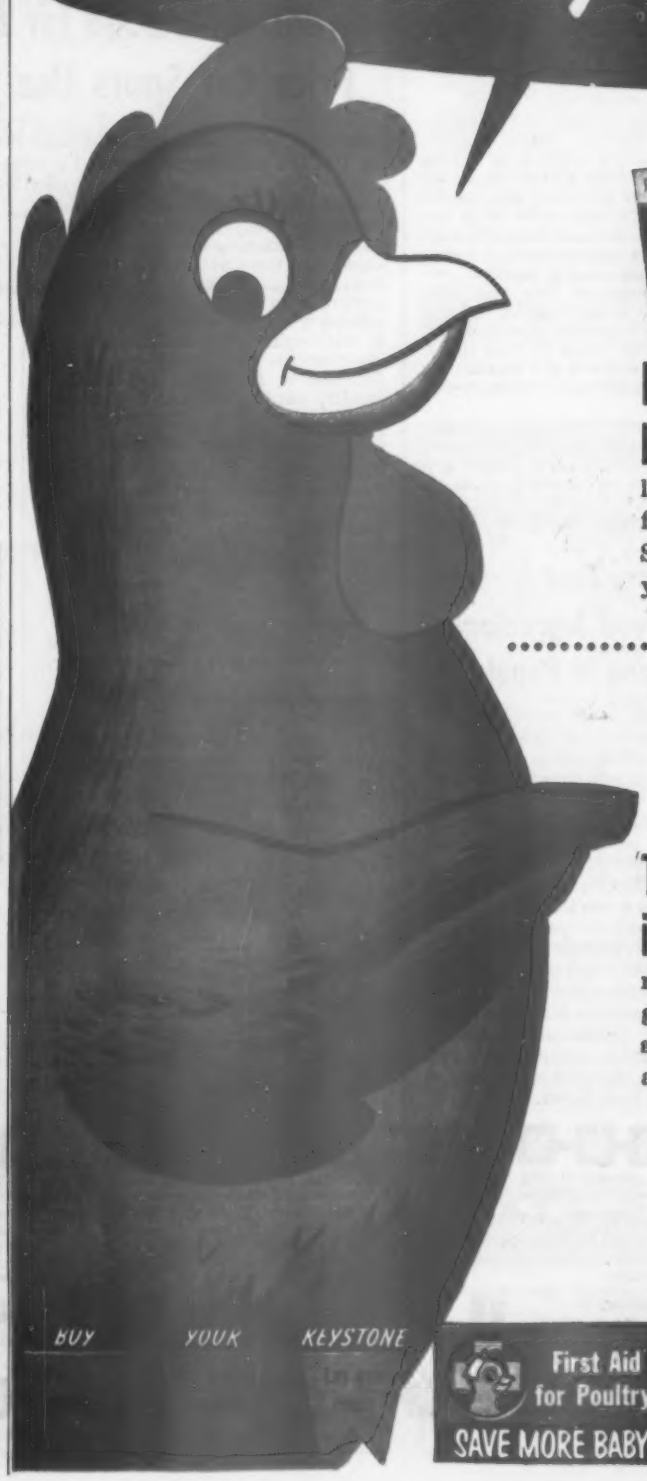

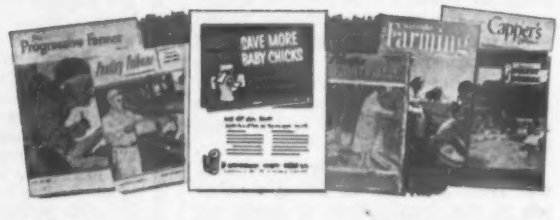

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and calf milk-replacers should contain 100 to 200 lb. of distillers dried solubles per ton, he said. For best results dairy and beef cattle feeds should contain 100 to 400 lb. of distillers dried grains per ton, he added. Distillers feeds contain an unknown factor for turkeys, and should be used in combination with whey and other supplements to cover the unknown factor area in poultry feeds, Dr. Carpenter said.

There are 15 essential trace elements for livestock, Dr. Davis told the feed men. Of these, cobalt, copper, iron, manganese, and iodine merit the greatest attention, although others have to be considered either for reasons of essentiality or possible toxicity. Excess of some of these minerals can be as harmful as a deficiency.

He discussed the relationship of copper and molybdenum. Copper deficiency conditions seem to be closely related to the presence or absence of molybdenum in the feed, with considerable trouble developing in the presence of appreciable quantities of molybdenum with low to average levels of copper. This may become a growing problem, he pointed out, as some tests have shown that land which formerly contained only one part per million of molybdenum now contains as much as seven parts per million, the accumulation resulting from the consistent application of fertilizers. It is well for a feed manufacturer to take safety precautions to be sure that he has enough copper in his rations to meet such situations. However, he warned that an excess of copper can be toxic too.

The problem of handling the micro-ingredients in a feed mill was discussed by Harry German, director of nutrition and research, Texas Farm Products Co., Nacogdoches.

"The list of nutrients required in many of our formulas continues to grow," Mr. German said, "and we are developing a situation where a standardization of formulas is difficult and the premix is becoming a growing problem."

"The premix must be tailor made to meet the needs of a specific formula. There is no universal premix in existence today that will be economical and the feed manufacturer must make a separate premix for each class of feeds that he manufactures." Dr. German said that one of the greatest sources of errors in developing premixes is improper mixing, and he said that he favored a premix having a 75 to 80% carrier, which will give a relatively high dilution of active ingredients and limit certain incompatabilities.

Trade Officials Report

At the opening session, after a welcome to the college by the president, David H. Morgan, the group heard brief reports from three trade association executives. Luther Pharr, president of the Texas Feed Manufacturers' Assn. expressed the appreciation of his organization for the cooperation of the college over many years and outlined some of the association problems this year. One of the big hurdles the industry must overcome, Mr. Pharr said, is that of keeping the retail feed dealer fully informed.

Richard L. Kathe, Director of Agricultural Service Division, American Feed Manufacturers Assn., Chicago, presented a premier showing of the new sound slide film developed by the AFMA for use by feed manufacturers and dealers. This first film, one of a series of a dozen or more, covers the field of formula feeds as a whole. The later films will take up individual areas such as broiler feeds, turkey feeds and the like. Mr. Kathe said that the films cost about $7,000 each to produce and will sell to exhibitors for $20.

Lloyd S. Larson, executive vice president, Midwest Feed Manufacturers Assn., Kansas City, emphasized that trade association views are not a penalty but an investment in over-all protection for an industry.

"The most important factor in producing a quality feed is conscience," Mr. Larson said. "Above facilities, wealth, formulae, salesmanship, conscience is most vital to serving a consumer. We must work together to solve even the simplest problem that a feed consumer may have."

W. B. Orr, executive secretary of the Texas association, presided at a banquet for the guests in the Memorial Student Center. He introduced K. C. Moore, who kept the crowd entertained with homespun humor.

The nutrition conference committee was composed of the following members of the A. & M. staff: J. R. Couch, chairman, F. D. Brock, Carl M. Lyman, J. C. Miller, I. W. Rupel, H. O. Kunkel, R. E. Leighton, J. H. Quisenberry.

ELEVATOR PLANNED

HENDERSON, KY.—Construction of a grain elevator in Henderson is planned by James C. Ellis, Owensboro, Ky., business man and farmer. The elevator will cost an estimated $1 million.

$50,000 ELEVATOR FIRE

LE MARS, IOWA—Gail Gilmore, owner of the Farmers Grain Co. elevator here estimated his loss at $50,000 following a fire which destroyed the structure and its contents.

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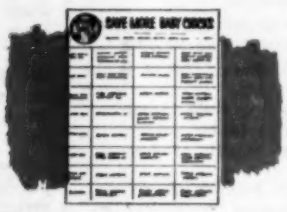

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PROMOTIONS—Four recent promotions were announced by Dale W. McMillen, Jr., president of Central Soya and McMillen Feed Mills, Fort Wayne, Ind. Don Butler, sales promotion manager, has been made advertising and sales promotion manager; Thomas S. Suelzer, manager of the insurance department, has been named to the commodity trading department and Robert S. Derck, eastern district assistant sales manager, has been promoted to manager of the newly formed south central sales district. Phillip J. Kane, personnel director of the company's Gibson City (Ill.) plant, has been transferred to Fort Wayne to assume the duties of insurance department manager. Mr. Butler joined the feed sales division of the company in 1950. He was named sales promotion manager in 1952. Mr. Suelzer joined the company as an accountant in 1946, and two years later was promoted to manager of the insurance department. In his new position he will be working in every phase of commodity trading connected with soybean processing and feed manufacturing. Mr. Derck has been a field representative of the company for the past 11 years, and in his new capacity will be managing sales activities in portions of Kentucky, Tennessee and Alabama, with headquarters in Nashville, Tenn.

USDA buys 241 Fans For Aerating CCC Grain

WASHINGTON—The U.S. Department of Agriculture has announced the purchase of 241 fan and motor assemblies for aerating small grains, primarily wheat and corn, stored in Commodity Credit Corp.-owned bins.

Of the 241 assemblies purchased, 51 are powered with gas engines and were purchased at a cost of $130.96 each. The remaining 190 are powered with electric motors and were purchased at a cost of $105.06 each. The successful bidder for both was the Ewing Foundry, Inc., Indianapolis, Ind.

The assemblies will be used to aerate grain in large flat-type storage structures. The assemblies will be used chiefly in North Dakota and South Dakota with some used in Minnesota, Wisconsin, Montana, and Oklahoma.

$300,000 FIRE LOSS

WALDORORO, MAINE — The Cohen Poultry Processing Co. plant located here on the bank of the Medomak River was destroyed Oct. 2 by fire caused by exploding tanks of natural gas. The owner, Philip Cohen, sustained a loss estimated at $300,000.

FINAL BARLEY PAYMENTS

WINNIPEG — Final payments by the Canadian Wheat Board on the 1953-54 barley pool aggregated $9,833,495. In announcing the final payment, C. D. Howe, Minister of Trade and Commerce, said that the 1953-54 oats pool will be closed out immediately. The final barley payment will average 9.7¢ per bu. for a total of 101,193,953 bu. delivered to the board in the pool period.

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Program Announced for Grain Sanitation Conference Nov. 14-16

KANSAS CITY—Plans have been announced for an extensive program at the National Grain Sanitation Conference, to be held Nov. 14-16 at the Aladdin Hotel in Kansas City.

The program will be conducted under the auspices of the Association of Operative Millers, with the assistance of the Millers National Federation.

Speakers will include entomologists and others from industry, the government and colleges.

The program will provide information on various grain sanitation problems and on measurs to prevent, control or clean up unsanitary conditions from the farm to the mill.

Registration will take place Nov. 14, and then speaking and discussion sessions will be held Nov. 15-16.

Speakers

Among the first speakers Nov. 15 will be Howard W. Files, vice president of Pillsbury Mills, Inc., Minneapolis, who will discuss "Mill Management and Sanitation." George P. Larrick, Food and Drug Administration commissioner, Washington, is another speaker, and his topic will be "Cleaner Foods Through Cooperation Between Processors and the Food and Drug Administration."

L. S. Hitchner, executive secretary, National Agricultural Chemicals Assn., will report on recent legislation pertaining to residues in or on raw agricultural commodities.

W. W. Dykstra, biologist, predator and rodent control division, Fish and Wildlife Service, U.S. Department of Interior, will outline new developments in rodent control at the farm, elevator and processing plant levels. Randall Latta, head, stored products insect section, Agricultural Marketing Service, U.S. Department of Agriculture, Washington, will discuss developments in protection of stored grain against insect destruction and contamination.

The subject "Does Contaminated Grain Contribute to Air Borne Contaminants?" will be discussed by William Schoenherr, entomologist, Lauhoff Grain Co., Danville, Ill.

Economic losses from milling infested wheat will be described by B. A. Burquest, associate biologist, Pillsbury Mills, Minneapolis.

Eric Kitely, entomologist, International Milling Co., Minneapolis, will speak on the subject "Technique for Determining Contaminants in Wheat, Flours and Finished Cereals." Paul McSpadden, sanitarian, Commander-Larabee Milling Co., Minneapolis, will report on rodent and insect contamination of grains and cereals while in transit.

Grain Storage

Opening the Nov. 16 sessions will be a talk by W. V. Hukill, agricultural engineer in charge, grain storage investigations, USDA, Iowa State College, Ames. He will explain techniques for drying and cooling grain in farm storage. Storage problems in country elevators will be discussed by Leo E. Holman, transportation and facilities branch, USDA, Washington.

The role of extension in promoting better grain sanitation will be outlined by M. P. Jones, extension entomologist, USDA, Washington.

Grain sanitation programs in three states—Virginia, North Dakota and Kansas—will be described by other speakers—Dr. J. O. Rowell, extension entomologist, Virginia Polytechnic Institute, Blacksburg; Wayne Colberg, extension entomologist, North Dakota State College, Fargo; and Dell Gates, extension entomologist, Kansas State College, Manhattan.

A film on the use of grain protectants and high frequency radio waves will be shown through the courtesy of the stored products insect section, U.S. Agricultural Marketing Service, Manhattan, Kansas.

Herman Steen, vice president, Millers National Federation, Chicago, will give the welcoming talk Nov. 15. Moderators of the conference sessions will be George B. Wagner, entomologist, Pillsbury Mills, Minneapolis; Prof. D. A. Wilbur, entomology department, Kansas State College; Harold Goossens, sanitarian, Russell-Miller Milling Co., Minneapolis; and Mr. McSpadden.

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USDA Announces 1954 Yearbook Of Agriculture

WASHINGTON—The U.S. Department of Agriculture has announced the publication of its 1954 Yearbook of Agriculture, a 520-page volume packed with facts about the complex system that brings American farm products to their users.

Entitled Marketing, the book comprises 18 sections and 88 chapters and was written by 117 marketing specialists, most of whom are employees of the department and of agricultural colleges.

A Congressional document, the yearbook is distributed mainly by members of the Congress. It also is sold by the Superintendent of Documents, Government Printing Office, Washington 25, D.C., at $1.75 a copy. The Department of Agriculture has no copies for general distribution.

In a forword, Ezra Taft Benson, Secretary of Agriculture, wrote about the importance of the subject, as follows:

"After the war our export markets expanded greatly and then shrank. Marketing became much more costly. The need grew for bigger and more stable markets at home and abroad and for more efficient methods of storing, transporting, and distributing our farm products. Those problems concern every farmer, every processor, every distributor, every family in the U.S.

"Our marketing system is intricate. It is sensitive to many economic and international developments. It includes millions of processors and dealers, each making his own plans. .

"The challenge to our American system is to maintain both freedom and order—to assure the flexibility that stimulates progress and the stability that promotes steady employment and purchasing power."

"The purpose of this book is to give information about the dynamic business that brings American farm products to their users. The information should help many persons: the farmer, to make more money; the housewife, to buy better; the wholesaler, retailer, and all the others who handle farm products, to give better service; the administrator and student of agriculture, to get a broader view of the structure of this large sector of our economy, within which so many agricultural problems come to focus.

Chicago Exchange Fete

CHICAGO — Chicago Board of Trade officers and directors honored 57 employees of the exchange who have completed 25 or more years of continuous service at a testimonial dinner in the Midland Hotel, Oct. 21.

Four employees who completed their twenty-fifth year of service recently were given gold pins by Sylvester J. Meyers, Arcady Farms Milling Co., board president. They are Michael Triolo, Gordon C. Lynch, Rudolph Schneider and Howard Hock.

Others who were honored at the dinner meeting were John Aitkins, who with 59 years of continuous service is the board's oldest employee, and three employees now on pension—Duncan Boden, Clarence Dexter and Joseph Schmitz — all of whom had service records exceeding 50 years before they retired.

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University of Minnesota Issues New Report on Grain Contamination Study

ST. PAUL — Measures aimed at cutting grain losses caused by rodents and insects all the way from the farm to the terminal elevator are expected to grow out of a special University of Minnesota report which has just been released, the university says.

The report on grain contamination is based on a recently completed study by the University of Minnesota Agricultural Experiment Station. The study involved 7,641 wheat samples from more than 60,450,000 bu. of wheat.

The study should help both farmers and grain handlers avoid losses due to delivery of unacceptable grain, according to C. E. Michel, head of the university's department of entomology.

The purpose of the study was to determine the kind, degree and place of rodent and insect contamination of grain, especially wheat, in Minnesota, North and South Dakota and Montana.

With this information, more effective, economical insect and rodent control can be developed and some of the uncertainty in marketing avoided. This would fit into the concerted efforts of industry, agriculture, the university and governmental agencies to improve farm products and their marketing, university officials said.

Robert Butler, until recently a member of the university's entomology staff, conducted the study, which was financed by the Minneapolis Grain Exchange, Duluth Board of Trade and Association of American Railroads.

Conclusions

Conclusions reached included the following:

1. The rodent problem is centered on the farm and decreases from the farm to the terminal. Montana has least contamination by rodents. The most serious problem exists in the southern part of the surveyed area.

2. In combining on the farm, the rodent problem is greatest where grain is swathed first. Swathed grain is more accessible to mice. Farmers or custom workers who fail to clean their combines well enough also face the problem.

3. On farms mice control needs to be vigorously added to rat control. Until now, most of the efforts on the farm have been centered around rat control, and the mice have been neglected.

4. Damage from rodents is not greatly higher in one season than another. This means that rodent control cannot be a seasonal activity but must be carried on the year-round.

5. Unlike the rodent problem, insect contamination increases from the farm to the terminal. In addition, as the grain moves from farm through elevators to the terminal, the insects attacking it become more and more the destructive type.

Again damage was lowest in western Montana although the rest of Montana and most of North Dakota had low rates of infestation. The problem of insects, is greatest in the southern part of the area.

Insect contamination in northwestern Minnesota was only slightly more serious than in North Dakota and Montana.

6. In farm control of insects, the summer and fall period is most important. At that time the grain on the farm needs to be checked especially carefully.

7. Insect problems of terminal stations are not as seasonal in nature.

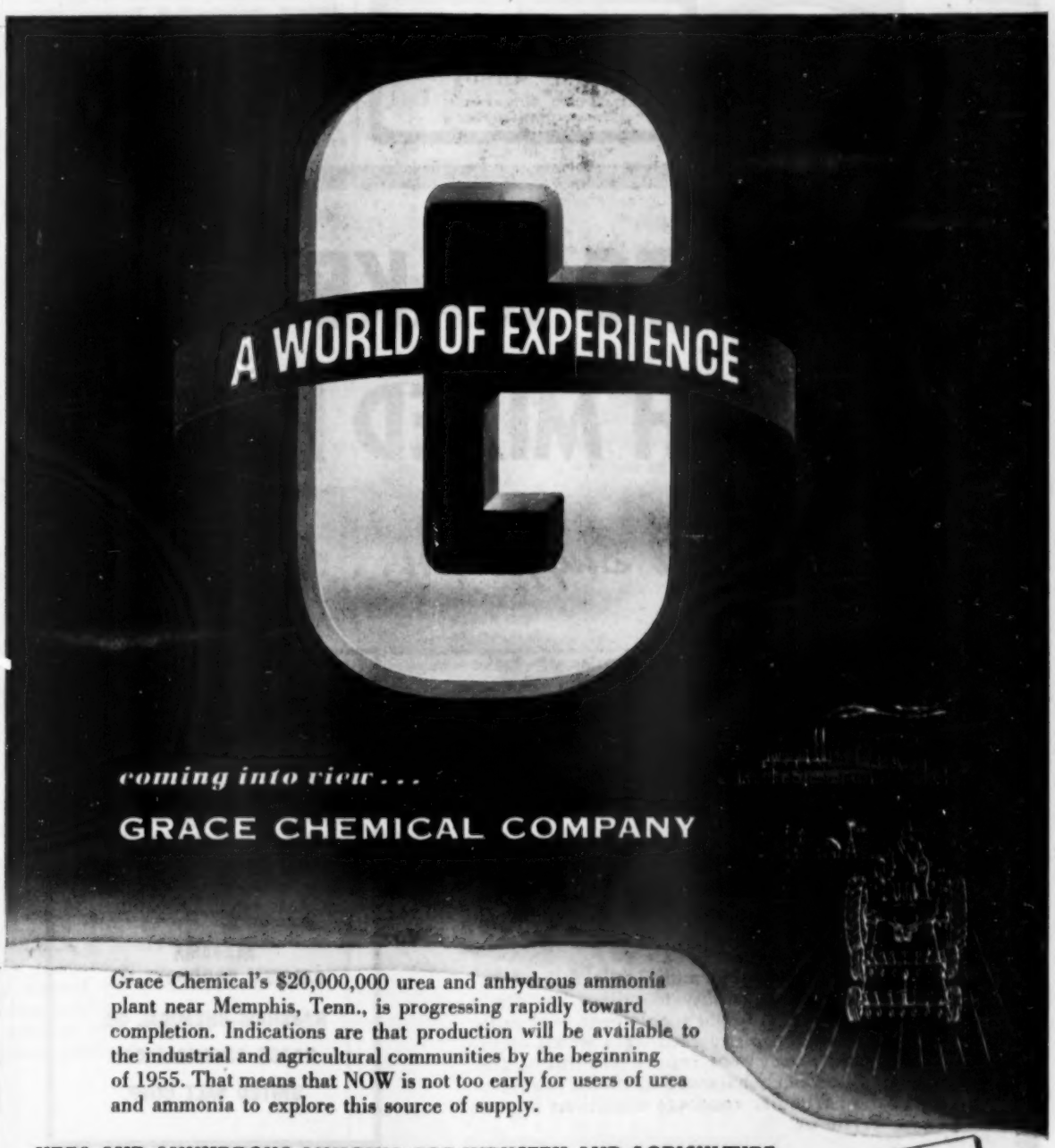
8. The larger the volume of wheat compared to the exposed surface, the lower the rodent contamination but the higher the insect contamination.

MICROFILM EDITION OF FEEDSTUFFS NOW AVAILABLE

FOR LIBRARIES AND COMPANIES with microfilm facilities, FEEDSTUFFS is now available in microfilm form, beginning with volume 22, covering the complete set of issues for the year 1950 and continuing through volume 25 for the year 1953. Subsequent volumes will be issued annually by University Microfilms, Ann Arbor, Mich.

One of the most pressing problems facing all types of libraries is that of providing adequate space for a constant flood of publications. Periodicals pose an especially difficult problem because of their bulk and number. For this reason, many libraries and other users of microfilm equipment are substituting microfilm editions for their paper copies after the latter have passed their period of maximum use.

The microfilm is in the form of positive microfilm, furnished on suitably labeled metal reels, each covering an entire volume. Orders should be addressed to University Microfilms, 313 N. First Street, Ann Arbor, Mich. The cost of each yearly edition is approximately $12.



Grace Chemical's $20,000,000 urea and anhydrous ammonia plant near Memphis, Tenn., is progressing rapidly toward completion. Indications are that production will be available to the industrial and agricultural communities by the beginning of 1955. That means that NOW is not too early for users of urea and ammonia to explore this source of supply.

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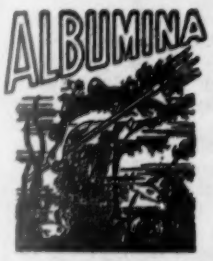

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Wene Laboratories Names Two to Staff

VINELAND, N.J.—Appointment of James P. Cameron as sales manager has been announced by Elmer Wene, president, Wene Poultry Laboratories, Inc., Vineland, N.J. Mr. Cameron, who was formerly with Whitmoyer Laboratories, Myerstown, Pa., will also be in charge of new products development and the creation of a new chemical manufacturing division.

Rudolph Kroha, Bridgeton poultryman, has been appointed as chief research chemist in the new Wene chemical division, which will manufacture a full line of poultry remedies and sanitation products, to be marketed throughout the U.S. and several foreign countries. Mr. Kroha, a native of Czechoslovakia, did research work in rubber for Britain and was recently with Wyeth Laboratories, Philadelphia.

BANK DIRECTOR

ST. JOSEPH, MO. — Dwight L. Dannen, president of Dannen Mills of St. Joseph, has been named a member of the board of directors of the First St. Joseph Stock Yards Bank. Mr. Dannen has been connected with the grain business since 1935 and has been president of the feed and soybean milling firm since 1952.

A. C. Hoehne

JOINS COMMITTEE—A. C. Hoehne, vice president of Archer-Daniels-Midland Co., Minneapolis, has been appointed to the oilseeds and peanut advisory committee of the U.S. Department of Agriculture. The committee assists in the development of research and marketing programs sponsored by the USDA. Mr. Hoehne has been associated with the oilseed industry since 1922 when he worked for the William O. Goodrich Co. of Milwaukee. When that firm was purchased by ADM in 1928 he joined ADM. In 1945 Mr. Hoehne was elected an assistant vice president and to the company's board of directors, then vice president. He is a member of the executive committee and board of directors of the National Soybean Processors Assn. He is also a member of the association's lecithin and oil trading sales committee.

Heavy Breed Turkey Testings Show Gain

WASHINGTON — The number of heavy breed turkeys tested by official state agencies during September totaled 123,761, compared with 100,169 in September last year—an increase of 24%, according to the U.S. Department of Agriculture.

The number of heavy breed turkeys tested in the period July-September totaled 202,158, compared with 135,334 during the same months last year—an increase of 49%.

Light breed turkeys tested during September totaled 67,156, compared with 95,330 in September last year—a decrease of 30%. Light breed turkeys tested during July-September totaled 213,886, compared with 190,575 during the same period last year—an increase of 12%.

NEW ARKANSAS FEED MILL

FOREMAN, ARK.—L. E. Biggar is completing construction of a modern feed mill near here. The mill is 60x100 ft.

GOING TO MAKE "A" DROUTH MIXED FEED?

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Check carefully on your formulas to make certain your customer gets the right vitamin and mineral balance for full protection of his foundation stock. Either Drouth Mixed Feed A (minimum grain content 75%) or Drouth Mixed Feed B (minimum grain content 60%) can be formulated to give this full protection on an economical basis.

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ADA EXECUTIVE CONFERENCE—The entire membership of the important executive, promotional and advertising committees of the American Dehydrators Assn. were present in Kansas City (above) Oct. 1 for a meeting to discuss the future of these activities. The committee voted to expand promotion, enlarge the advertising campaign and to publish additional booklets on the use of dehydrated alfalfa in livestock and poultry rations. Present at the conference were, seated around the table left to right, W. A. Donnelly, Cerophyl division of the National Alfalfa Dehydrating & Milling Co., Lawrence, Kansas; Kenneth Morrison, Consolidated Blenders, Inc., Hastings, Neb.; Raymond E. Bert, Bert & Wetta, Maize, Kansas; Loyd M. Faris, the W. J. Small division of the Archer-Daniels-Midland Co., Kansas City; Vernon C. Britton, V. C. Britton Co., Firebaugh, Calif., ADA president; Joseph Chrisman, executive vice president, ADA, Kansas City; Eunice Hunt, secretary; Thomas J. Mateer, Consolidated Blenders, Inc., Fremont, Neb.; J. W. Fielder, Dixon (Cal.) Dryer Co.; C. W. Scheuer and J. D. Cole, J. D. Cole Grain Co., Muskogee, Okla.

Cattle Go On Binge, Court Blames Feed

BATON ROUGE, LA. — A cattle feeder here was awarded $50,000 by the U.S. District Court which found that some blackstrap molasses he bought from the State Penitentiary at Angola caused 27 cows to become "dead drunk." The court agreed with Lloyd J. Cobb, the cattle feeder, who said the feed was in a fermented state, causing drunkenness and finally death.

TENNESSEE POULTRYMEN MEET

MEMPHIS, TENN. — W. B. King, president of the Tennessee Egg Co. of Chattanooga, was elected president of the Tennessee Poultry & Egg Federation as the organization closed a two-day session at the Hotel Peabody in Memphis Oct. 12. He succeeds Blanton Smith of Nashville. John L. Tucker of Prospect was elected first vice president; T. W. Howington of Memphis second vice president; and Dr. O. E. Goff of Knoxville, secretary-treasurer. New directors named were M. V. Williams of Friendship, George Blackburn of Kingston Springs and Henry Tilford, Jr., of Shelbyville.

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*The duplication of Feedstuffs circulation in areas served by competing regional publications is amazingly small. To advertisers, this means that of every 10 Feedstuffs readers in a regional area served by a competing regional publication only 2.4 to 3.7 readers also receive that regional publication.

GET THE DETAILS: This is but one of the readership preference facts confirmed by an independent comprehensive study of businesspapers serving the feed industry. Additional detailed information is available. Write—wire—phone the Feedstuffs' office nearest you.

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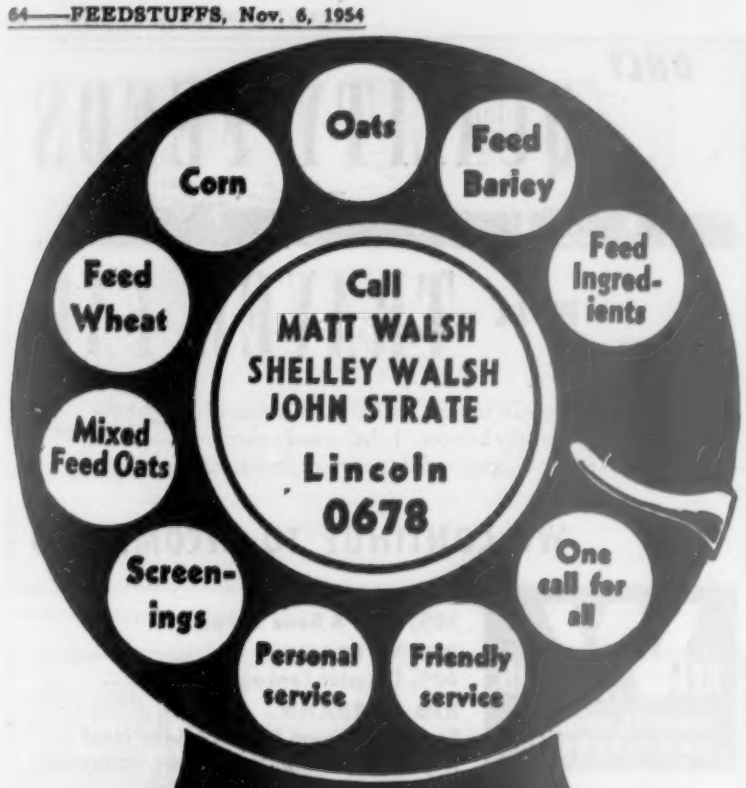

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Frank W. Miller

STALEY SALES HEAD—New western sales manager for the Staley Milling Co., Kansas City, is Frank W. Miller, above. Mr. Miller has been a representative for Staley in western Iowa for eight years. A graduate of the University of Missouri, he was born on a farm near Tipton, Mo. Mr. Miller is making his headquarters in Kansas City.

Churchill Shipping

WINNIPEG — Thirty-six boats cleared with grain cargoes from the port of Churchill on Hudson Bay this year. This number of vessels and the 12,484,000 bu. cleared set new records. The comparative totals for last year were 31 boats and 10,784,000 bu.

The season of navigation at this northern port opened July 6, and closed Oct. 7, with the clearing of the steamship Pindar.

Specialist Sees Little Fat Cattle Price Change

FORT COLLINS, COLO. — What prices can stockmen expect to receive for fat cattle 150 to 200 days from now? That question is uppermost in the minds of stockmen who are now placing feeders in their feedlots.

Harry Smith, marketing specialist for the Colorado A and M Extension Service, believes prices during the coming feeding season will not be much different than they were during the 1953-54 feeding season. "And cattle feeders made money feeding cattle last year," he adds.

Mr. Smith expects prices for lower grades of slaughter cattle to work somewhat lower during the next two months. This is due to the movement of grass-fed cattle from the range, plus the culling of range herds. These animals will be competing with lower slaughter grades.

Mr. Smith also believes that the active demand for feeders in the Corn Belt should limit the extent of the downward prices caused by increased numbers of cattle moving to market.

For those who have feeders to sell, Mr. Smith says early sales appear to be to the advantage of the producer.

IOWA OPEN HOUSE

CALAMUS, IOWA—The Farmers Co-Op. Elevator here held an open house following the installation of new feed mixing and grinding equipment.

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Guard the performance of your swine feeds! Pigs eat less feed per pound of gain on modern, antibiotic-fortified rations. Consequently, such rations should contain higher levels of vitamins. This has been emphasized repeatedly by nutrition authorities.

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FREE—NEW 28-PAGE ILLUSTRATED FEED BOOKLET: *Pathway to Progress for the Feed Manufacturer* describes in detail the numerous ways in which Merck Service can help *YOU*. Containing useful facts and instructive illustrations of deficiency diseases, this brochure is an informative reference for the formulator of modern feeds. *Write for your free copy today.*

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58–C	2 Gm.	4 Gm.	10 Gm.	109 Gm.
84	4 Gm.	8 Gm.	18 Gm.	—
93	4 Gm.	4 Gm.	24 Gm.	104 Gm.

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Flour Mill Accountants Meet at Wichita, Kansas

WICHITA, KANSAS—Members of the Flour Mill Accountants Assn. held a one-day meeting Oct. 22 in the Allis Hotel, Wichita. The meeting was attended by nearly 50 flour mill and grain accountants.

During the morning session, the group heard Lee Waters, of Kansas City, a representative of the National Cash Register Co., and a member of the National Association of Cost Accountants, discuss mechanizing payrolls and general accounting systems. One of the afternoon speakers was Gene Sloyer of the Rine Drilling Co., Wichita, who spoke on the subject, "What the Boss Wants to Know." The afternoon panel discussion covered warehouse receipt records, Commodity Credit Corp. charges and handling, transit liability and allied matters.

Those attending the association meeting represented mill and grain firms in Kansas City; Omaha; Alton, Ill.; Denver; Denton, Texas, and several other midwest cities. H. E. Weakley, controller of the Kansas Milling Co., was program chairman.

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Dr. Hess Announces Advertising Program

ASHLAND, OHIO — Dr. Hess & Clark, Inc., recently announced that it is carrying out an extensive fall advertising campaign for its animal health products.

The program of advertising to farmers includes a new radio campaign, an expanded direct mail program, a state farm paper schedule and advertising in national farm magazines. The program started with a special fold-out four-page ad in the November issue of Successful Farming.

Emphasis in the advertising is on the firm's new Cadmium Hog Wormer and on animal health products containing nitrofurazone.

O. S. Sotirhos Joins Omaha Laboratory

OMAHA — The Alfalfa Processors Laboratory, Omaha, has announced the appointment of Othon S. Sotirhos as chief chemist. Mr. Sotirhos, a graduate of Creighton University, formerly was a chemist with Dale Products, Columbus, Neb. The announcement was made by Joseph N. Schmitt, manager of the laboratory.

Joseph E. Eistner

HEADS GRAIN SUPERVISION OFFICE—Joseph E. Eistner has been appointed district officer in charge, Kansas City grain division office, USDA, effective Nov. 1. He succeeds Martin Schuler, who retired as of that date after 37 years of service with the grain division. Mr. Eistner joined the grain division at Fort Worth, Texas, in July 1917. In July, 1919 he was transferred to Peoria and placed in charge of the Peoria district in 1921. Remaining in that post until 1923, Mr. Eistner was transferred to New York, where he was promoted to officer in charge of the Hoboken, N.J. sub-office in 1924. He was transferred to Kansas City in 1931 as assistant in general grain supervision, a post he held until February, 1943. During the war years, Mr. Eistner was given a special assignment in Mexico under direction of the board of economic welfare, where he was responsible for shipment as to grade and condition of 90,000 tons of garbanzo beans to the U.S. and possessions. He returned to his Kansas City post in July, 1945, and in 1946 was named assistant in charge of the district office. Mr. Eistner is widely known in Kansas City and midwestern grain circles through his extensive teaching of grain grading schools and supervision work.

High-Moisture Soybean Storage Dangers Cited

DECATUR, IND.—Danger in storing high-moisture soybeans is emphasized by the National Soybean Crop Improvement Countil in urging elevator operators to alert growers to take necessary precautions.

For safe storage over winter, soybeans should be clean and under 13% moisture, it is stated. The council calls attention to a warning by Dr. D. G. Carter, University of Illinois agricultural engineer, who says, "In general 12% moisture is about the dividing line between safe storage for a year or longer and danger of deterioration."

"Clean soybeans between 13 and 14% can be stored through the winter," says Dr. Carter, "but may seriously deteriorate if storage time is followed by a spell of warm weather. In Illinois research studies, soybeans between 13 and 14% became musty and graded 'sample' after 10 months' storage, germination decreased and fat acidity went up."

Trouble lurks in immature frosted beans, those damaged by rain, lodging or late harvest. Elevator tests should be made of an average sample. One load of 15% beans in a bin can cause trouble. On clear, drying days moisture percentage may swing as much as five points.

"Clean beans are essential," the council states. Elevators report they frequently must move beans to stop spoilage, even at 12% moisture, if they contain high moisture foreign material such as weed seeds."

Vitamin E
and assembly-line poultry

In the days of barnyard chicken raising, the birds got along fairly well on what natural seeds and grains they and their owners could scratch up.

Not today. Mass production of poultry using high-energy rations makes it difficult for the bird to get all the nutrients that nature intended it to have. Like vitamin E. You want to be sure it's in the feed in sufficient amounts when the bird eats it, both because it is a true biological antioxidant and because of the other roles nature has assigned to it.

What are all the effects of vitamin E in a bird's metabolism? Nobody knows yet. But you *can* make sure you aren't taking a chance on the bird getting enough by using a supplement that is stable, one with a potency you can count on.

We make sure Myvamix Vitamin E Feed Supplement is stable by using the vitamin in its ester form—*d*-α-tocopheryl acetate. And, we're careful to make sure there are 20,000 International Units of vitamin E to the pound. The base is dry soy meal, as easy to handle as anything you have in your mill. For information or a quotation, write *Distillation Products Industries,* Rochester 3, N. Y. Sales offices: New York and Chicago • Charles Albert Smith Limited, Montreal and Toronto.

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Grain Millers' Union Will Meet Nov. 8-10

CHICAGO—The American Federation of Grain Millers (AFL) will hold its fourth constitutional convention Nov. 8-10 at the Hotel Sherman in Chicago.

Among the speakers will be William F. Schnitzler, AFL secretary-treasurer; Patrick Gorhan, general secretary-treasurer of the Amalgamated Meat Cutters & Butchers Workers of America; James Cross, president of the Bakery & Confectionery Workers International, and Thomas J. O'Malley, regional director of the Wage and Hour Division, U.S. Department of Labor.

Grain Miller Locals 27 and 69 will be hosts at a cocktail hour, banquet and other entertainment features.

Alfalfa Processors Assn. To Start Ad Program

TOLEDO, OHIO — The Alfalfa Processors Assn., Inc., composed of alfalfa dehydrators in Ohio, Michigan and Indiana, has taken steps to inaugurate a program of consumer advertising and promotion which will be slanted directly to feeders of livestock and poultry. The action was approved by the board of directors following a dinner meeting of members at the Commodore Perry Hotel Oct. 22.

The program will be patterned along the lines of one now under way in Nebraska and Kansas and will be conducted by Pleskach & Smith Advertising Agency, Omaha, Neb., which is handling the Nebraska-Kansas program.

About 60 men and wives were present at the dinner meeting. Speakers included G. A. Holland, president, Holland Pioneer Mills, Inc., Ohio City, Ohio, Don E. Rogers, Feedstuffs, Chicago, and B. C. Maddox, account executive, Pleskach & Smith. Each speaker presented views on advertising and public relations, followed by a period of general discussion. A. H. Poppe, president, Bremco Alfalfa Mills, Inc., presided at the meeting.

It is the hope of the association that the program can be underway by December. Media having concentrated farmer readership will be used.

Besides Mr. Poppe, the following are members of the board of directors: Marvin Rohloff, Rohloff Bros., Inc., Graytown, Ohio; Glenn Miller, Miller Feed Co., Defiance, Ohio; Roy J. Weasel, Portage Valley Milling Co., Inc., Bradner, Ohio; L. J. Schiller, Hayward, Inc., Oak Harbor, Ohio; Fred Piehl, Piehl's Alfalfa Mill, Blissfield, Mich.; Al Schwab, Schwab Bros., New Bavaria, Ohio.

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What's New in Feeding

Putting Feed Research to Work

Nutrition Papers Presented At Poultry Science Assn. Meeting

Many of the papers presented at the 1954 meeting of the Poultry Science Assn. at Purdue University dealt with poultry nutrition.

The papers of greatest interest to the feed industry are being covered in a series of reviews in this department of Feedstuffs. This is the third installment and it deals with antibiotics and arsenicals.

Antibotics and Arsenicals

R. White-Stevens and H. G. Zeibel of Lederle Laboratories Division, American Cyanamid Co., studied the effects of feeding different levels of protein (16 to 24%) in combination with graded levels of chlortetracycline (Aureomycin) — 0.10, 50, 100, and 200 ppm.—in rations for White Rock broilers, fed under commercial conditions in New Jersey and Delaware. Three experiments, involving a total of 20,000 birds, were conducted. It was found that the optimum protein level for best growth was 20 to 22%, and the optimum level of Aureomycin was between 50 and 100 ppm. (45.4 and 90.8 grams per ton of feed, respectively).

At the low level of protein, the low level of antibiotic was most effective, whereas with higher protein levels, best growth was obtained with a higher level of antibiotic, the optimum combination being 22% protein and 100 ppm. of antibiotic (90.8 grams per ton). Males were found to show a greater response to higher protein rations than females, whereas females responded more to increased antibiotic levels than did males.

The results of feeding high levels of antibiotics to laying hens were reported by Burt Heywang of the Agricultural Research Service, U.S.D.A., Glendale, Arizona. When chlortetracycline (Aureomycin) was fed at levels of 50 and 100 grams per ton, egg production of White Leghorns in their first year of production was increased, and less feed was required per dozen eggs produced. The improvement in rate and efficiency of egg production was apparent during both hot and cool weather.

Breeder Hens

C. W. Carlson and Wm. Kohlmeyer of the South Dakota Agricultural Experiment Station, College Station, S.D., reported results of feeding various levels of antibiotics to breeder hens. In one experiment, egg production was increased significantly (14.1%) and from .7 to 1.3 lb. less feed was required per dozen eggs produced when procaine penicillin was added at levels of 4 or 6 grams per ton of mash, fed free choice with grain. However, there was no improvement in egg production or feed efficiency when penicillin at 2 grams per ton, was added to an all-mash ration. The feeding of 50-100 grams per ton of Aureomycin to pullets afflicted with ocularleukosis reduced mortality by 21% and increased egg production 12.5%. The greatest improvement in egg production in all the treated groups was during the winter and early spring months.

In a second experiment, high levels of antibiotic (Aureomycin or Terramycin, 100 grams per ton) in the ration for heavy breed and hybrid pullets gave no better results than low levels of antibiotic (procaine penicillin, 4 grams per ton); although there was some increase in egg production (not statistically significant) and an improvement in feed efficiency in all the treated lots. However, a highly significant increase in egg production resulted when Single Comb White Leghorn pullets were fed a high level of antibiotic (oxytetracycline-Terramycin—100 grams per ton). When all-mash rations were fed, there appeared to be a somewhat greater response to the low level of antibiotic at a protein level of 12% than at 16%. Antibiotic supplementation had no consistent or significant effect on hatchability of fertile eggs, progeny growth or egg quality.

Effect on Hatchability

J. R. Sizemore, and associates, of the Agricultural Research Service, U.S.D.A., Beltsville, Maryland, presented data on the effect of antibiotic (Aureomycin) in the chick ration upon hatchability of eggs produced in the second laying year.

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STONEMO – The Grit with the

Hatchability of eggs from hens fed antibiotic in the chick ration was still significantly higher in the second year of production than the hatchability of eggs from hens not fed antibiotic in the chick ration. The feeding of antibiotic in the laying ration resulted in higher hatchability, regardless of the chick ration fed. It was reported that neither percent egg production nor fertility was influenced by the (chick) growing ration or the laying ration, or a combination of both during the two-year study.

Experiments were conducted by M. M. Hauser and associates of the Ontario Agricultural College, Guelph, Ontario, Canada, to study the effects of antibiotic feeding upon the growth and intestinal bacteria of chicks. They found that chicks housed in a highly contaminated environment showed a growth response to antibiotics from 0 to 14 days of age, but not from 14 to 27 days. Growth increases were found to be accompanied by increased numbers of coliform bacteria and decreased numbers of enterococci.

In a second experiment with chicks in a relatively clean environment, there was no increase in growth during the first two weeks of chicks fed varying levels of chloromycetin, but after 2 weeks, the growth of chicks fed 25 to 100 ppm. of the antibiotic was increased. Again, as in the first experiment, increased numbers of coliform bacteria were found to be associated with increased growth rate. Feed efficiency was progressively improved as the level of antibiotic was raised from 10 to 200 ppm., and numbers of lactobacillus microorganisms were decreased.

The Ontario investigators considered their results to be further evidence that the chick growth response to antibiotics is associated with increased numbers of coliform bacteria in the intestinal tract, and that the improvement in feed efficiency may be related to decreased numbers of intestinal lactobacilli.

Neal F. Morehouse, of Dr. Salsbury's Laboratories, Charles City, Iowa, presented results of feeding 3 - nitro - 4 - hydroxy - phenyl arsonic acid, alone and in combination with sulfanilamide to New Hampshire pullets continuously from time of hatching through an experimental laying period. The arsonic acid was fed at a level of 90 ppm. (81.7 grams per ton) and sulfanilamide at 300 ppm. (272.4 grams per ton). Treated pullets were significantly heavier (0.6 lb.) than their non-treated controls at the time the first egg was laid, and 0.3 lb. heavier at the end of the laying year. The average age of first egg was 167.6 days for the treated group and 171.1 days for the controls. Egg production was higher in the treated pullets (3,040 more eggs produced, 24.3 more eggs per pullet housed) and at the end of the laying year 81.6% of the treated group had survived as compared with 70.4% of the controls. Hatchability of eggs from three treated pens was 62.8, 77.5, and 77.1% respectively, as compared with 63.1, 75.0, and 74.0% hatchability of like numbers of eggs from three control pens. Data from field trials showed that hens receiving 3-nitro-4-hydroxyphenyl arsonic acid produced more eggs on a lower feed requirement than non-treated hens.

F. R. Tarver and associates of the University of Tennessee investigated the effects of 3-nitro-phenylarsonic acid, alone and in combination with penicillin, upon carcass quality of broilers. The 9-week experiment involved 10 pens of 48 New Hampshire chicks each. Two pens were fed a standard broiler ration, two pens received the standard broiler ration plus penicillin, 3 pens received the standard broiler ration plus 3-nitrophenylarsonic acid and 3 pens received the standard broiler ration plus both the antibiotic and the arsenical. At the end of the experiment, representative birds from each pen were slaughtered for determination of carcass quality. The results showed: (1) no marked differences in degree of pigmentation, feathering, and general appearance, (2) all pens graded A, (3) the fleshing of all birds was good, (4) the birds receiving both the antibiotic and the arsenical grew faster and (5) the average dressing loss was similar in all pens.

(Continued on page 73)

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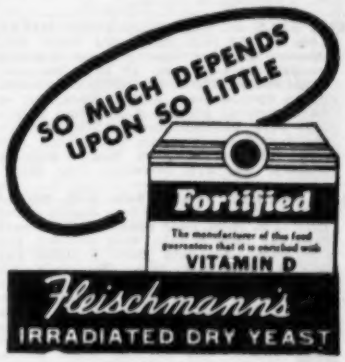
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SITUATIONS WANTED

RESPONSIBLE MAN, AGE 31, WITH farm and feed background, seeks opportunity with West Coast firm. Eight years supervisory experience in manufacturing, mixing and sales of feed and allied products. Interested in connection with feed or allied industries in a supervisory or sales capacity. Address 239, Feedstuffs, Minneapolis 1, Minn.

RELIABLE FEED AND FARM SUPPLY salesman wants to relocate in Midwest or South. Eleven years as territory manager with a nationally known feed company. Three years supervisor with a half million capacity broiler grower. I will consider feed sales territory, chick hatchery sales and flock supervision or management large retail feed and farm supply business. Address 238, Feedstuffs, Minneapolis 1, Minn.

RESPONSIBLE MAN, AGE 33, WITH initiative seeks opportunity with East Coast firm. Extensive background includes Ph.D. in biochemistry, physiology and animal nutrition. Two years' animal research work with USDA, Beltsville. Presently employed past three years with substantial feed manufacturer as Products Director. Responsibilities include product development, production quality control, technical sales promotion and applied research. Address 224, Feedstuffs, Minneapolis 1, Minn.

Two-Nation Livestock Research Plan Set Up

PHILADELPHIA — Establishment of a cooperative research affiliation between the school of veterinary medicine of the University of Pennsylvania and the Mexican government's Institute of Livestock Research (the Institute de Investigaciones) located at Palo Alto, near Mexico City, was announced by Dr. Gaylord P. Harnwell, president, University of Pennsylvaunia. Research will be concentrated on anaplasmosis, a blood disease, shipping fever and brucellosis.

Financial support for the project to the extent of $18,000 is being supplied by the Foreign Operations Administration. The E. R. Squibb and Sons de Mexico, a subsidiary of the Olin Mathieson Chemical Corp., New York, and also E. R. Squibb & Sons, New York, are parties to the affiliation and will also assist in financing the Palo Alto undertaking.

Central Soya Names Chattanooga Personnel

FORT WAYNE, IND.—R. W. Fay, manager of the Chattanooga plant of Central Soya Co., Inc., has announced appointments to two more positions at the company's new southeastern unit, which is rapidly nearing completion.

Claude B. Dobbs will become assistant elevator superintendent and Paul Snodgrass was named purchasing agent.

FOR SALE

Fully Equipped feedmill 100 tons daily capacity over 30 bulk ingredient bins. 65,000 bushels concrete grain storage equipped for bulk and sacked loading and unloading track scale, pelletmill draver feeders, office space and equipment. Immediate possession, located Toledo, Ohio. Will sell on first reasonable cash offer. Address inquiries, Star Feed & Grain, 812 Rosewood Avenue, Winnetka, Illinois.

FEEDSTUFFS—*The Feedman's weekly newspaper*
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Poultry Trade Readjustment Due, USDA Chief Predicts

HARRISONVILLE, MO. — Ezra Taft Benson, Secretary of Agriculture, told poultrymen attending the Cass County Poultry Day, Harrisonville, Mo., Oct. 28, that while all is not well in the poultry industry, the "only solution lies in better balanced production, improved marketing, more intensive promotion and continued application of the great advances brought about through research and education."

He lauded the poultry trade for its determination to solve its own problems instead of putting them in the government's hands, and boosting the per capita consumption of eggs, chickens and turkeys to record proportions.

Mr. Benson predicted that a readjustment of poultry and egg prices will come about much sooner because "spokesmen for your industry have rejected a government price support program which could only prolong the imbalance."

Hog-Poultry Parallel Noted

The Secretary continued:

"There is a striking parallel between the situation confronting poultrymen today and that which faced hog producers in 1952. Hog prices declined from the Korean War peaks to about 75% of parity. There was considerable agitation for a government price support program.

"Farmers themselves worked out a far more effective solution. They cut back farrowings and within a matter of a few months hog prices were moving upward again. They have been well over 100% of parity most of this year, reaching record seasonal peaks last April. Hog farmers then responded to favorable prices, just as poultrymen did, and now increased pork production is raising a warning flag to producers.

"In a free economy, some price fluctuation is inevitable. It is also desirable. It is the only effective means by which consumers can register with farmers their demands for increased or decreased production of a given commodity.

"Government attempts to interfere with the law of supply and demand, especially as it relates to perishable commodities, have generally been ineffective and sometimes even disastrous—as witness our experience with potatoes. I commend the poultry industry for its steadfast refusal to prescribe patent medicine remedies for a patient whose health is basically sound and who needs nothing more than a little time to accomplish his own complete recovery.

"Even though better balanced production must be the immediate goal of the poultry industry, we must never lose sight of what can be gained by ever-increasing efficiency.

"You have been able to increase egg production per hen to something like 180 eggs per year. Balanced rations are now recognized as being of prime importance. We are able to prevent or effectively treat many of the poultry diseases that not so long ago took an appalling toll. Consumers are enjoying more and better poultry products than ever before because they now know what they are getting for their dollars and cents.

"What brought on these changes?

"Mainly two things, I believe: Endless research and the application of this research by the poultry industry.

"Research has paid dividends to the industry. It has helped you produce a superior product at lower cost, with less manual labor, and with more certainty.

"Research has paid dividends to consumers, too. Consumers buy with greater assurance, at less expense, and they are able to enjoy poultry products more often.

"With our expanding population, the poultry industry is assured of a strong market for its products in the years ahead. Its future is tied to the future of America and I cannot believe that is anything but bright."

Industry Stand

Mr. Benson pointed out that several weeks ago the Egg Industry Advisory Committee which met in Washington issued a statement reaffirming its stand that the government should not conduct an egg price support, egg surplus purchase, or an egg subsidy program. It said that the U.S. Department of Agriculture could perform its best role by keeping producers informed of poultry population and replacement facts and in encouraging efficiency. The committee, he said, also pointed out that because of a good poultry year in 1953, a 5% increase in potential layers on Sept. 1, 1954, compared with a year earlier, followed.

The Secretary, in commenting on Missouri's drouth situation said that "farmers who need help are going to get it." He added, "Last year nearly one sixth of the economic disaster loans which were made in the entire U.S. went to Missouri farmers. So did approximately one sixth of all of the feed distributed under the drouth aid program." Missouri farmers borrowed $13.5 million from the Farmers Home Administration during the 12 months ending in June, 1954, he said.

Production of Millfeed Shows Decline

Production of millfeed in tons for week ending Oct. 29, and prior two weeks, together with season total of (1) principal mills in Nebraska, Kansas and Oklahoma and the cities of Kansas City and St. Joseph; (2) principal mills of Minnesota, Iowa, North and South Dakota and Montana, including Minneapolis, St. Paul and Duluth-Superior; (3) mills of Buffalo, N.Y. Production computed on the basis of 72% flour extraction.

	Southwest* Weekly production	Southwest* Crop year to date	Northwest* Weekly production	Northwest* Crop year to date	Buffalo† Weekly production	Buffalo† Crop year to date	Combined** Weekly production	Combined** Crop yr. production to date
Oct. 25-29	25,415	436,121	14,097	236,430	10,323	181,794	49,835	853,345
Prev. week	‡24,534		‡14,240		12,111		‡50,886	
Two wks. ago	25,966		14,649		11,040		51,655	
1953	26,310	426,336	16,351	251,033	11,662	176,022	54,323	853,390
1952	26,424	446,590	17,389	268,444	10,720	173,537	53,533	888,571
1951	25,233	420,808	16,905	263,935	9,199	177,655	50,388	862,431
1950	24,348	457,264	12,986	267,112	9,202	156,734	46,536	981,100

*Principal mills. **74% of total capacity. †All mills. ‡Revised.

Light Breed Poult Hatchings Increase

ST. PAUL—The six leading light breed turkey poult producing states set 296,000 light breed eggs and hatched 147,000 light breed poults during the week ending Oct. 23, according to a special report by the Minnesota State-Federal Crop and Livestock Reporting Service.

The number of light breed eggs set represented an increase of 17% from a week earlier, and the light breed poult hatchings represented an increase of 16%.

The six states are Minnesota, Pennsylvania, Virginia, Ohio, Missouri and California.

These same states set 25,000 heavy breed eggs during the week under review. Heavy breed poult hatchings were not significant and were not reported.

The Minnesota report notes that the seasonal low for the turkey hatching year is believed to have been reached two weeks ago. Usually production increases from this time of year until a peak is reached the following spring.

Northwest Feed Group Will Meet Jan. 17-18

MINNEAPOLIS — The Northwest Retail Feed Assn. conference has been set for Jan. 17-18 at the Nicollet Hotel, Minneapolis, announced W. D. Flemming, secretary of the group.

Poultry & Egg Board Formed in Oklahoma

STILLWATER, OKLA. — State poultry producers, feed manufacturers and processors formed an Oklahoma Poultry & Egg Board, first of its kind in the state, Oct. 28 at a meeting on the Oklahoma A. & M. College campus. Prof. R. B. Thompson, Oklahoma A. & M. poultry department head, is chairman of the new group, which has 15 members.

The board was set up to cooperate with the Poultry & Egg National Board in programs to improve quality and increase consumption of poultry products. Don Brooks, Oklahoma A. & M. poultry department member, secretary of the state group, said.

Board members present at the meeting were Al Bryan, Oklahoma City; Hugh Embry, Blackwell; Haskell Cudd, Stillwater; Ed. Guinn, Chickasha; Virgil Lemon, Norman; E. M. Smith, Helena; Earnest Fry, Thomas; V. C. Wilson, Jr., Stillwater; Mack Thomas, Muskogee; F. L. Holton, Jr., Poteau; Charles Williams, Cleveland, and Fred Unruh, Enid.

GROUND BROKEN FOR NEW GMI OFFICE—Harry A. Bullis, chairman of the board of directors, other executives of General Mills, Inc., and civic officials of Park Ridge, Ill., broke ground for the new regional headquarters building in a ceremony at the building site Oct. 13. The new building will house the GMI office staff now in offices at 208 S. LaSalle St., Chicago. Shown, left to right, are Fred Haack, mayor of Park Ridge; G. C. Ballhorn, comptroller and vice president, GMI; Glenn R. Krueger, senior Chicago representative for GMI; Mr. Bullis, and E. H. Kees, regional general sales manager.

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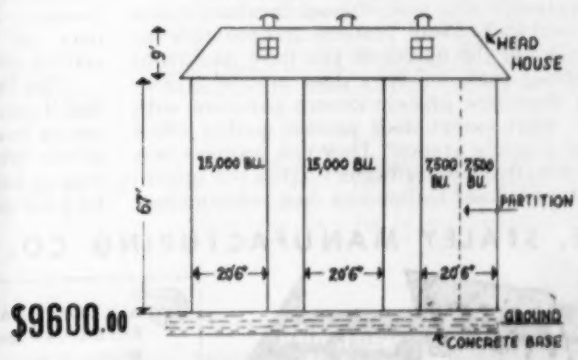

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PUTTING FEED RESEARCH TO WORK

(Continued from page 69)

Also, there was little difference in feed efficiency between pens.

COMMENTS:

Recent research and field experience are showing the practicability of using higher antibiotic levels in broiler rations. Apparently under practical broiler raising conditions additional antibotic aids in stimulating feed consumption and reducing mortality when birds are exposed to the continuous stress of so-called "low-level" or subclinical infections, and also in the presence of the more damaging respiratory infections and diseases.

The work with antibiotics in laying and breeder rations shows that antibiotic administration at a fairly high level (50 to 100 grams per ton of feed) may be of real value in maintaining or increasing the level of egg production and lowering mortality when birds are afflicted with such diseases as leukosis or respiratory infections. Results of feeding antibiotics to apparently healthy layers are not consistent, in all cases and the indications so far are that low levels of antibiotic (4 to 6 grams per ton of mash) may be as effective as higher levels (50 to 100 grams per ton of feed). It seems that more research is needed to definitely establish the value of antibiotics in layer and breeder rations under various conditions.

The report by the Ontario investigators adds to a growing body of evidence which indicates that at least a part of the growth promoting effect of antibiotics is due to the establishment of a more beneficial bacterial population in the intestinal tract. However, this is probably only one of many steps in clearing up the mystery of how antibiotics function, as it still is not clear whether the beneficial micro-organisms synthesize an unknown growth factor(s), or whether they make available to the chick greater amounts of some unknown nutrient needed for most rapid and efficient growth. In addition, it is apparent that antibiotics function to suppress "low-level" infections which are present wherever birds are raised continuously in the same facilities.

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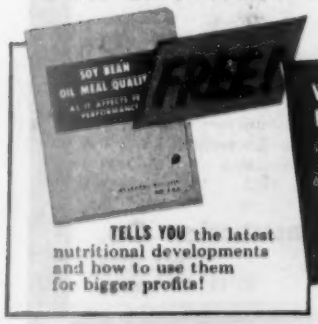

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A. E. Staley Appoints 2 Territory Managers

DECATUR, ILL. — The appointment of two new territory managers for Illinois has been announced by the formula feed sales department of the A. E. Staley Manufacturing Co.

William C. Pitts, Olney, has been assigned the southeastern Illinois territory, while Ralph C. Huge, Chillicothe, has been assigned the north central Illinois territory. Both men were previously assistant territory managers.

The company has also announced the appointment of three Illinois assistant territory managers. They are Robert O. Archer, Jr., Downers Grove, northwest territory; Clyde B. Angell, Quincy, west central territory; and Joseph C. Douglass, Mt. Zion, central Illinois.

MINNESOTA CHANGE

MEDFORD, MINN.—Mr. and Mrs. C. J. Bauer and their son, Kenneth, have moved to Medford, Minn., where they are operating a feed mill.

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CORNELL CONFERENCE

(Continued from page 1)

crop would probably be about 4% larger than a year ago. He saw a downward adjustment in poultry production but stated that much of the actual decrease in feed usage would occur after mid-1955. Dr. Cunningham explained that the number of layers would probably average about 2% higher, broiler production show little change, but chickens and turkeys raised in 1955 "will undoubtedly be reduced from 1954 numbers."

This speaker saw milk cow numbers maintained at about the 1954 level and beef cattle feeding operations this winter expected to be as extensive as a year ago. Shipments of feeder cattle into the Corn Belt this fall show gains over a year ago, he said.

Dr. Cunningham sees grain supplies available for feed in 1954-55 as larger than the amounts actually fed last year, despite drouth situations. Assuming a "normal" carryover, he stated the supply of corn available for feed this year amounts to 2,899 million bu., compared with 2,372 million bu. fed last year. He also indicated a greater supply of oats available, barley nearly double the consumption for feed last year, grain sorghums about a 38 million bu. increase in availability over amount fed last year and an increase in the feeding of wheat during the last half of the year expected because of the availability of low-quality Canadian wheat.

Same As Last Year

"The supplies of oilseed meals, animal proteins, grain proteins and urea, calculated on an oilseed meal equivalent basis, for feed this year are estimated to be 14,623,000 tons, nearly the same as the 14,572,000 tons fed during 1953-54," he stated. He indicated an increase of 1,050,000 tons of soybean meal if exports do not exceed 50 million bu., offsetting the 600,000-ton cottonseed meal decrease. He said that it is believed that at least as large a tonnage of urea will be used this year as the estimated 75 thousand tons used for feed last year.

Dr. Cunningham said that the total amount of grains, oilseed meals and by-products fed to livestock in the U.S. during 1953-54 was about 117 million tons, and some 139 million tons are available for feed this year assuming "normal" carryovers.

He said that a probable usage of 15,319,000 tons of high-protein feeds is indicated, compared with available supplies of 14,623,000 or a calculated deficit of about 4%.

FORMULA FEED OUTPUT

(Continued from page 4)

milk and similar products. Most of these straight feeds can be used in two ways: (1) They can be fed directly, or (2) they can be used in the manufacture of formula feed.

Commercial feed is a term used to designate all feed products, exclusive of grains and roughage, sold to consumers. It does not refer to formula feed only. Commercial feed includes formula feed and also ingredient-type or straight feed products sold to feeders. Most of the products, other than formula feeds, in the commercial feed classification are by-product feeds—by-products of the grain milling, oilseed crushing, meat packing, brewing, dairy and other industries.

It follows from these definitions that the tonnage of commercial feed in any state would be larger than the tonnage of formula feed.

Leading States

As shown in this report, leading states in formula feed production, all with indicated output of approximately or more than 1 million tons a year, are New York, California, Ohio, Illinois, Texas, Pennsylvania, Missouri, Tennessee, Indiana, Minnesota and Iowa.

Leading states in formula feed consumption, all with indicated use of more than 1 million tons a year—are California, New York, Texas, Pennsylvania, Iowa, Illinois, Georgia, Missouri and Indiana.

Where official state figures are available, the state figures in the accompanying table are from the latest available state reports. In a few cases, there is some lag in these state reports, and the state consumption figures may not cover the exact calendar year shown for purposes of this report. As a result, it is possible that a certain tonnage figure, for comparison, may not reflect completely a change from the previous year resulting, for example, from the drouth.

However, in almost all cases, the state figures do reflect trends and actual changes for the years shown.

The first set of figures in the accompanying table shows the actual tonnages of commercial feed (ingredient or straight feeds plus formula feeds) sold at retail in the states reporting such figures. All figures are from feed control officials' reports in those states.

State Production

The second set of figures sets forth the amounts of formula feeds produced by manufacturers in each state. All of these figures, except that for Wisconsin, are estimates based on various data. Among the sources of information used in preparing this report on production was the American Feed Manufacturers Assn. report on total formula feed output in the U.S. Other sources of information, including Bureau of Census data, were used in estimating production for the various states.

The third set of figures in the table presents the total amount of formula feed consumed in each state. In the cases where official state government figures were available, these figures were used in preparing this report on consumption by states. In cases where no recent state-reported figures were available, other estimates were made.

The figures reporting consumption of poultry feed by states, in the fourth set of figures, were from state reports or were worked out from other data, including U.S. Department of Agriculture figures on broiler, turkey and chicken production.

The dairy feed consumption figures were from state figures or were derived from a USDA report on rations fed to milk cows.

The state swine feed consumption figures are from state reports or were computed from USDA and other data on hog production and feeding practices.

The remainder of the formula feed consumed includes mostly beef cattle feed, and also horse and mule feed, pet food, feeds for fur-bearing animals and similar feeds. In one or two cases, the "other formula feed" figures may include poultry feed, for example, but the figures are reported as shown because they are from state reports and cannot accurately be broken down further.

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Because the principal activity of this corporation is expanding at an unusual rate, and a diversity in corporate activity is no longer considered advisable, these two successfully operated plants are being offered for sale.

They are ideally located in prosperous farming communities of Kansas with a large demand for livestock and poultry feeds. Both are well-equipped with modern mills and mixers and ample storage capacity.

These feed mills are being offered singly or together. They are being offered at a price that represents a real bargain.

This modern feed mill is located in a prosperous South Central Kansas farming community.

South Central KANSAS FEED MILL

This is the larger of the two mills and is located in a town with a population of 11,657 in South Central Kansas.

The building is one story with approximately 15,000 sq. ft. of masonry construction and in excellent condition, with its own switch track connecting with the AT & S. Fe railroad. Rock Island railroad also goes through the town.

The elevator has a capacity of 40,000 bushels of grain in 18 compartments. It has a conveyor with 125 foot belt, operating to the head house which is 61 feet high.

The 18 foot by 8 foot truck scale is equipped with an air lift for quick dumping of grain.

The major equipment consists of:

2 Ton Vertical Mixer — Hammer Mill
1 Ton Vertical Mixer — Crumbler
50 HP California Pellet Mill

This plant has a capacity of 1,000,000 lbs. of feed per month.

Thoroughly modern feed mill in North Central Kansas now available at a bargain price.

North Central KANSAS FEED MILL

The smaller of these two plants is located in a town of 7,139 population in North Central Kansas. It has its own switch track on the Mo. Pac. R.R. and it is the only feed mill in this prosperous community. Four major railroads pass through the town. The elevator has a capacity of 8,000 bushels and the modern equipment consists of the following:

2—1 Ton Vertical Mixers
California Pellet Mill
Crumbler

The truck scale, equipped with an air lift, is 8' 4" wide and 22' long with a capacity of 64,000 lbs.

All the equipment is modern and in excellent condition.

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THE FEED MARKETS

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Demand — Supply — Trends — Prices

Quotations on feed ingredients shown in these and adjoining columns are wholesale prices, per ton, bagged, for prompt delivery, unless otherwise noted. They are the latest quotations available from Feedstuffs correspondents and are not necessarily those in effect on date of publication. The prices represent fair average trading values and do not necessarily represent extreme low or high levels at which individual sales might have occurred. A descriptive summary of supply and demand factors prevalent in the feed market appears on page 2.

ALFALFA MEAL

Cincinnati: Demand fair; trend steady; supply adequate; 17% dehydrated, 100,000 vitamin A $65.55@68.55; 17% dehydrated, no A $63.55; 13% fine suncured $44@50.

Philadelphia: Demand dull; supply light; 17% dehydrated $75.

Portland: Demand good; trend higher; supply ample; 15% suncured $37, f.o.b. Idaho; 15% suncured $45, f.o.b. California; dehydrated $50, f.o.b. California.

Chicago: Demand slow; supply fair; 17% dehydrated, with 100,000 units vitamin A guaranteed $60.50@61; 17% with no A guaranteed $57@58; 15% suncured with no A $50; 13% fine ground suncured $48.

Seattle: Demand fair; trend firm; supply good; 15% protein suncured $49 ton, 136,000 A unit dehydrated $58 ton, both delivered, carlots.

Ft. Worth: Demand fair; supply sufficient; dehydrated, 100,000 A 17%, Kansas-Nebraska origin $65.50, delivered Group 1, prompt; Kansas-Nebraska-California origin $67.50, delivered TCP, November.

Memphis: Demand fair; trend steady; supply ample; dehydrated, 17% protein, guaranteed 100,000 units vitamin A $65.

Indianapolis: Demand fair; trend unchanged; supply ample; 13% $49; dehydrated, 17% $67.

St. Louis: Demand good for dehydrated and suncured; supply of dehydrated ample, suncured limited; dehydrated, 17%, 100,000 A $62.50 ton; suncured No. 1 fine ground, 13% $48 ton, f.o.b. St. Louis.

Minneapolis: Demand was slow to fair, with prices up $1@2 ton. Quotations: 17% dehydrated, 100,000 units of vitamin A guaranteed $61.50@64.50, granules $66.50, oil treated $67.50.

Milwaukee: Demand and supply fair; western dehydrated, 17%, with 100,000 A guaranteed $62.

Boston: Demand fair; supply tight; dehydrated 17% $70.75; suncured, 17% $63.

Los Angeles: Demand moderate; trend steady; supply ample; 15% suncured $45; 17% dehydrated $52.

Kansas City: The market has moved considerably higher with demand improved and offerings limited; 17% dehydrated alfalfa meal with 100,000 units of vitamin A guaranteed on arrival $57.50@60, sacked, Kansas City; no A guarantee $51@52, sacked, Kansas City; No. 1 Colorado ¼ in. suncured $41@42, fine ground $44@46.

BARLEY FEED

Baltimore: Demand and supply fair; $55.

Chicago: Demand and supply fair; $46.

Seattle: Demand fair; trend steady; supply good; whole $63 ton, ground $65 ton, rolled $65 ton, all ex-warehouse, l.c.l., sacked.

Indianapolis: Demand slow; trend firm; supply sufficient; whole $71, crimped $73, rolled $76.

Milwaukee: Demand and supply fair; pulverized, white $50, feed $48; needles $1.14@1.20 bu.

San Francisco: Demand fair; supply ample; rolled $66, ground $64.

Boston: Demand and supply light; $47 @47.50.

Los Angeles: Demand fair; trend steady; supply ample; standard rolled $3.30, standard ground $3.26.

Ogden: Supply normal; rolled $48@53; whole $41@46.

Portland: Demand good; trend higher; supply ample; rolled $65, ground $63.

Philadelphia: Demand and supply fair; pulverized $54.

BLOOD FLOUR

Louisville: Demand slow; trend weak; supply ample; $115 ton.

BLOOD MEAL

Chicago: Demand fair; supply ample; $150.

Louisville: Demand slow; trend weak; supply ample; $115 ton.

Seattle: Demand and trend steady; supply good; $119, f.o.b. local packing plants.

Portland: Demand good; trend higher; supply ample; $135.

San Francisco: Demand and supply fair; $6.25 a unit of ammonia; screened $6.10 a unit of ammonia.

Cincinnati: Demand and supply fair; trend steady; $140@145.

BONE MEAL

Ft. Worth: Demand fair; supply sufficient; $85, sacked, f.o.b. Ft. Worth.

San Francisco: Demand good; supply fair; $55.

Louisville: Demand slow; trend weak; supply ample; $75@80 ton.

BONE MEAL (STEAMED)

Boston: Demand slow; supply tight; $80.

Los Angeles: Demand fair; trend unchanged; supply ample; domestic $82.

St. Louis: Demand good; supply adequate; $90@95 ton, sacked.

Indianapolis: Demand only fair; trend unchanged; supply sufficient; $80 ton.

San Francisco: Demand good; supply ample; $75.

St. Paul: Market stronger; demand fair to good; $85 in 5-ton lots or more.

Ft. Worth: Demand good; supply very limited; best quality German production 23% B.P.L., 14% phosphorus, 21% calcium $72.50, 100-lb. paper bags, ex-dock Houston, November-December arrival.

Louisville: Demand poor; trend weak; supply normal; $80@85 ton.

Seattle: Demand steady; trend firm; supply good; $85 ton, ex-warehouse, l.c.l.

Chicago: Demand slow; supply fair; $65 @80.

BREWERS' DRIED GRAINS

Boston: Demand fair; supply short; 24% $63, bulk; 26% $65@67.

Philadelphia: Demand dull; supply fair; $67.

San Francisco: Demand fair; supply ample; $57.50.

St. Louis: Demand good; supply adequate; $51 ton, bulk; $57 ton, sacked.

Milwaukee: Demand and supply fair; 26% $57, 22% $55.

Louisville: Demand good; trend firm; supply ample; $60 ton.

Chicago: Demand slow; supply limited; 24% $56@56.50.

Ft. Worth: Demand slow; supply sufficient; 24% $62@63, prompt, delivered Ft. Worth.

Cincinnati: Demand poor; trend steady; supply moderate; $60@62.

BREWERS' DRIED YEAST

Boston: Demand good; supply adequate; 11¼¢ lb.

Milwaukee: Demand fair; supply ample; 10½@11¼¢ lb., in carlots; 10¾@12½¢, l.c.l.

Cincinnati: Carlots 10¢ lb.; 5-ton lots 11¢; ton lots 11¼¢.

Pittsburgh: Carlots 10¢ lb.; 5-ton lots 11¢; ton lots 11¼¢.

New Orleans: Carlots 10¢ lb.; 5-ton lots 11¢; ton lots 11¼¢.

New York: Carlots 9½¢ lb.; 10-ton lots 10¢ lb.; 5-ton lots 10½¢ lb.; ton lots 11¢ lb., f.o.b. New Jersey.

St. Louis: Demand good; supply limited; 9¾@10¼¢ lb. in carlots; 10¾@11¢ lb. in ton lots; 11¼@12¢ lb. in less than ton lots.

Chicago: Demand fair; supply ample; 10@11½¢ lb., in carlots; 10½@12½¢, l.c.l.

Louisville: Demand fair; trend steady; supply ample; $210 ton.

BUTTERMILK-CONDENSED

Boston: Demand good; supply fair; $3.85 cwt.

Ogden: Supply average; $4.90, 100-lb. drum.

Indianapolis: Demand spotty; trend unchanged; supply sufficient; 100-lb. bag $3.70, in barrels $4.90.

San Francisco: Demand fair; supply good; $5.35 cwt.

Los Angeles: Demand fair; trend unchanged; supply ample; $5.25 in 100-lb. drums; $4.50 in large barrels.

Louisville: Demand fair; trend firm; supply ample; $4.25 cwt.

Chicago: Demand fair; supply adequate; $3.50@3.75 cwt. in carlots.

Philadelphia: Demand moderate; supply fair; $4.

CALCITE CRYSTALS AND FLOUR

(All prices net, including freight and tax)

New York: Crystals $13.24, flour $9.49.
Buffalo: Crystals $13.95, flour $10.20.
Toledo: Crystals $15.52, flour $11.77.
Boston: Crystals $14.37, flour $10.62.
Limecrest, N.J.: Crystals $9.50, flour $5.74.

CALCIUM CARBONATE

Los Angeles: Demand fair; trend steady; supply ample; meal and flour $10.53 ton, carloads; grits $13.03 ton, carloads.

Seattle: Demand steady; supply ample; trend unchanged; $14 ton, ex-warehouse, truck lots.

Chicago: Plain $8.55 ton in 100-lb. bags, delivered.

Minneapolis: Plain $10; iodized (⅛ lb. KI per ton) $13.60; iodized-manganesed $15.05.

Cincinnati: Demand fair; trend steady; supply adequate; $8@9.

CHARCOAL

Boston: Demand and supply light; $75.

Los Angeles: Demand slow; supply ample; trend unchanged; oak, 40-lb. bags $90 in ton lots.

Chicago: Demand quiet; supply ample; poultry charcoal $93 ton, in 50-lb. multiwalls.

San Francisco: Demand steady; supply ample; $59.50.

COCONUT MEAL

Seattle: Demand fair; trend steady; supply sufficient; $54 ton, ex-dock, 30-day shipment from Philippines.

San Francisco: Demand fair; supply ample; solvent meal $58, expeller meal $63.

Los Angeles: Demand slow; trend steady; supply ample; $60@62, ex-dock, spot; $62@63, offshore, November.

Portland: Demand good; supply ample; trend unchanged; $64.

COD LIVER OIL (FORTIFIED)

Boston: Demand slow; supply good; 600 D, 2,250 A 23¢ lb.; 300 D, 2,250 A 21¢; 300 D, 1,500 A 18½¢.

New York: Trend steady; price per lb. in 55 gal. drums (413-420 lb.): 300 ICU, 1,500 A 18½@20¢; 300 ICU, 2,250 A 20½@22¢; 300 ICU, 3,000 A 22½@24¢; 600 ICU, 1,500 A 19½@22½¢; 600 ICU, 2,250 A 21½@23¢; 600 ICU, 3,000 A 23½@27¢, f.o.b. Massachusetts, Pennsylvania and New Jersey shipping points.

CONDENSED FISH SOLUBLES

Boston: Demand good; supply fair; 5¢ lb.

Los Angeles: Demand moderate; trend steady; supply ample; 5½@5¾¢.

CORN GERM MEAL

St. Louis: Demand good; supply limited; $50 ton, St. Louis.

CORN GLUTEN FEED AND MEAL

(All quotations for all cities are sacked basis; bulk basis $5 less)

Minneapolis: Feed $57.77, meal $54.77.
Atlanta: Feed $64.92, meal $91.92.
Birmingham: Feed $63.18, meal $90.18.
Boston: Feed $62.15, meal $89.15.
Chicago: Feed $53, meal $79.
Cleveland: Feed $59.04, meal $86.04.
Denver: Feed $61, meal $88.
Ft. Worth: Feed $59.50, meal $86.50.
Indianapolis: Feed $56.50, meal $83.50.
Kansas City: Feed $52, meal $79.
Louisville: Feed $58.11, meal $86.11.
New Orleans: Feed $60.88, meal $87.88.
New York: Feed $61.69, meal $88.69.
Norfolk: Feed $61, meal $88.
Philadelphia: Feed $61.23, meal $88.23.
Pittsburgh: Feed $59.50, meal $86.50.
St. Louis: Feed $52, meal $79.

CORN OIL MEAL

Cincinnati: Demand fair; trend steady; supply adequate; $59.80@60.80.

Louisville: Demand slow; trend firm; supply normal; $59.81 ton.

COTTONSEED OIL MEAL

Los Angeles: Demand limited; trend weaker; supply ample; $68, local plants.

Ogden: Supply average; 41% $78@83.

Kansas City: Trend is firmer with demand fair and offerings adequate; $71@71.50, sacked, Memphis, for nearby shipment.

Boston: Demand steady; supply adequate; 41% $86.27.

Indianapolis: Demand improved; trend higher; supply sufficient; $82.50 ton.

San Francisco: Demand good; supply ample; $72.46.

Memphis: Demand fair; trend steady; supply adequate; prime 41% protein, old process $70, sacked; new process, 41% solvent $69, sacked.

Cincinnati: Demand poor; trend higher; supply adequate; $80@81.

Louisville: Demand fair; trend steady; supply ample; $79.52 ton.

Chicago: Demand fair; supply plentiful; hydraulic $81, solvent $82.

Ft. Worth: Demand slow; supply sufficient; carlots, central and north Texas origin, 41% old process $75@76; solvent, west Texas origin, 41%, low gossypol $74, delivered Ft. Worth; pellets $2 additional.

Seattle: Demand fair; trend steady; supply ample; $82.50 ton, delivered, carlots, 41% expeller process.

Portland: Demand good; supply ample; trend unchanged; $70, Los Angeles.

Philadelphia: Demand dull; supply fair; $85.

Wichita: Demand moderate; supply sufficient; 41% old process $83; 41% solvent $80.

D ACTIVATED ANIMAL STEROL POWDERED

Kansas City: Demand fair; trend steady; supply adequate; 10½@11⅝¢ lb.

Cincinnati: Demand fair; trend steady; supply ample; 1,500 ICU 11@12¢; 3,000 ICU 18¢, warehouse.

New York: Trend steady; 1,500 ICU 10@13.6¢ bagged, 11@12¢ drums; 3,000 ICU 16@19¢ bagged, 17@18¢ drums, f.o.b. New Jersey.

A & D FEEDING OIL

Milwaukee: Demand and supply fair; 85 D, 100 A $1.50; concentrated vitamin oils, 300 D, 750 A 23¢; 300 D, 1,500 A 26¢; 300 D, 2,250 A 29½¢.

Seattle: Demand and trend steady; supply ample; 300 D, 2,250 A 22¢ lb., 300 D, 1,500 A 19¢ lb., 300 D, 750 A 17¢ lb., all ex-warehouse, drums included.

Minneapolis: Straight A feeding oil 12¢ per million; 85 D $1.12 gal.; 300 D, 750 A 18¢ lb.; 300 D, 1,500 A 20½¢ lb.; 300 D, 2,250 A 22½¢ lb., single drum lots.

New York: Trend steady; price per lb. in 55 gal. drums (413-420 lb.): 300 ICU, 750 A 15@17¢; 300 ICU, 1,500 A 17@19½¢; 300 ICU, 2,250 A 19½@21½¢; 300 ICU, 3,000 A 21½@23¢; 600 ICU, 1,500 A 18@20½¢; 600 ICU, 3,000 A 25¢, f.o.b. Massachusetts, Pennsylvania and New Jersey shipping points.

Chicago: Demand fair; supply adequate; straight A feeding oil, with 10,000 units vitamin A per gram 10¼@11¼¢ a million units of vitamin A, l.c.l., packed in 55 gal. drums, f.o.b. Chicago, drums included.

Boston: Demand slow; supply good; 600 D, 1,500 A 18¢ lb.; 300 D, 2,250 A 20¢; 300 D, 1,500 A 17¢; 300 D, 750 A 15½¢.

DEFLUORINATED PHOSPHATE

Tupelo, Miss.: $49.50.
Coronet, Fla.: 17% $56, 14½% $48.
Houston: $65.50.
Wales, Tenn.: $64.35.

DICALCIUM PHOSPHATE

Portland: Demand good; supply ample; trend unchanged; $98.

Cincinnati: 18% phosphorus $75@77.

St. Louis: Minimum phosphorus 21%, maximum fluorine .01% guaranteed $84, f.o.b. St. Louis in 100-lb. multiwall bags; minimum phosphorus 18½%, maximum fluorine 1.01% guaranteed $74, f.o.b. St. Louis in 100-lb. multiwall bags.

Bonnie, Fla.: Demand improving; supply adequate; minimum phosphorus 20% $80 net ton; freight equalized with closest production point, carload basis.

Chicago: Demand fair; supply adequate; stock food grade, 18.5% phosphorus, 20,000 lb. or more $74 net ton in 100-lb. papers basis Chicago Heights, Ill.; less than 20,000 lb. $79 net ton; 21% phosphorus 20,000 lb. or more $84 net ton, basis Chicago Heights and Nashville, Tenn., less than 20,000 lb. $89 net ton.

Trenton, Mich.: Minimum phosphorus 21%, maximum fluorine .01% guaranteed $84, f.o.b. Trenton, in 100-lb. multiwall bags; minimum phosphorus 18½%, maximum fluorine .01% guaranteed $74, f.o.b. Trenton in 100-lb. multiwall bags.

East St. Louis: Monocalcium or dicalcium phosphate, 18½% phosphorus $74 ton, bagged, f.o.b. cars.

Adams, Mass.: Minimum phosphorus 18.5%, minimum 25% calcium, maximum .01% fluorine guaranteed $74 ton, f.o.b. Adams, in 100-lb. multiwall bags.

Columbia, Tenn.: Minimum phosphorus 18.5%, minimum 25% calcium, maximum .01% fluorine guaranteed $74 ton, f.o.b. Columbia in 100-lb. multiwall bags.

DISTILLERS' DRIED GRAINS

Louisville: Demand good; trend steady; supply fair; bourbon, light $63 ton, dark $65, solubles $35.

New York: Demand fair; trend unsteady; supply sufficient; light corn grain $65, bulk, Boston; dried solubles $39, sacked.

San Francisco: Demand fair; supply ample; solubles $35.

Boston: Demand quiet; supply adequate; light $69, dark $73.75.

Philadelphia: Demand dull; supply light; $72.

Cincinnati: Demand poor; trend steady; supply somewhat limited; $65@67.

DRIED BEET PULP

Seattle: Demand fair; trend steady; supply ample; $44 ton, delivered, carlots.

Boston: Demand and supply light; $57.

Los Angeles: Demand good; trend stronger; supply ample; $46.50 in paper bags.

Ogden: Supply normal; $43@48.

Milwaukee: Demand and supply fair; $51.75.

San Francisco: Demand good; supply fair; $42.46.

Ft. Worth: Demand quiet; supply sufficient; carlots, 50-lb. papers $59.40, delivered Ft. Worth, November-December shipment.

Cincinnati: Demand fair; trend steady; supply adequate; $51.50@55.

DRIED BUTTERMILK

Boston: Demand good; supply short; 11¢ lb.

Los Angeles: Demand fair; supply ample; trend unchanged; 9¾¢ lb.

Ogden: Supply average; $8.65, 100-lb. bag.

Chicago: Demand strong; supply tight; $13 cwt. in carlots.

Minneapolis: Market stronger; demand fair; supply limited; $12@12.75 cwt.

Indianapolis: Demand good; trend unchanged; supply tight; $10 cwt.

San Francisco: Demand fair; supply ample; $9.75 cwt.

Milwaukee: Demand good; supply tight; 12@12¼¢.

Ft. Worth: Demand limited; supply sufficient; local production $10 cwt., f.o.b. Ft. Worth.

Louisville: Demand fair; trend strong; supply light; $13.50 cwt.

Wichita: Demand fair; supply sufficient; $10.25 cwt.

DRIED CITRUS PULP

Boston: Demand slow; supply irregular; $52.35.

San Francisco: Demand good; supply fair; meal $45.

Los Angeles: Demand good; trend steady; supply light; f.o.b. southern California producer's plant: orange pulp $38 sacked, $35 bulk.

DRIED SKIM MILK

Boston: Demand good; supply tight; 12¢ lb.

Los Angeles: Demand good; trend strong; supply light; $13.50@14 cwt.

Philadelphia: Demand moderate; supply fair; $12.50.

Milwaukee: Demand good; supply tight; $14.50@15.

Minneapolis: Market firm; demand fair; supply tight; $14@14.50 cwt.

Chicago: Demand strong; supply tight; $14@15 cwt. in carlots.

Louisville: Demand good; trend very strong; supply fair; $15.50 cwt.

Portland: Demand good; supply ample; trend unchanged; $9.50.

Cincinnati: Demand and supply fair; trend steady; $13@16.

San Francisco: Demand and supply fair; 10¼¢ lb.

DRIED WHEY

Boston: Demand light; supply fair; 6¼¢ lb.

Kansas City: Demand fair; offerings ample; straight grade $6.25, fortified $6.50@6.95 cwt.

Los Angeles: Demand fair; trend steady, supply ample; $7, fortified; $6.75, unfortified.

Ogden: Supply normal; $6.50, 100-lb. bag.

Ft. Worth: Demand fair; supply adequate; carlots, standard $6.25, fortified $6.50 cwt., sacked, delivered Ft. Worth or any Texas point or in ton lots, f.o.b. warehouse Ft. Worth.

Seattle: Demand steady; supply ample; trend unchanged; $7 cwt., ex-warehouse.

Louisville: Demand good; trend steady; supply ample; $6.50@7 cwt.

Chicago: Demand good; supply tight; $6.25 cwt. in carlots.

Portland: Demand good; supply ample; trend unchanged; $6.30.

Philadelphia: Demand moderate; supply fair; $6.25.

Cincinnati: Demand fair; trend steady; supply adequate; $6.25.

San Francisco: Demand steady; supply good; $6.50 cwt.

Minneapolis: Market firm at $5.75@6.25 cwt.

FISH MEAL

Ft. Worth: Demand inactive; supply temporarily very short; Angola 60% $147.50, f.o.b. truck or car, ex-dock Houston, early December.

Louisville: Demand fair; trend stronger; supply ample; $165@170 ton.

Seattle: Demand good; trend steady; supply ample; Canadian herring meal $2.10 a unit protein, delivered Seattle; blended and salmon meal $2.05 a unit protein, f.o.b. local plants.

Minneapolis: Market steady to stronger; 60% meal from West Coast $152; 70% Canadian herring meal $164.25.

Indianapolis: Demand fair; trend upward; supply sufficient; $170 ton.

San Francisco: Demand fair; supply ample; $2.15@2.30 a unit of protein.

Milwaukee: Demand and supply fair; 60% $168.

Chicago: Demand fair; supply limited; menhaden fish meal, 60% protein, f.o.b. East Coast $142 ton; 60% blended West Coast $128; Northwest herring-salmon blend $132.50; herring meal 73% protein $2 a unit of protein.

Boston: Demand active; supply fair; $138@139.

Ogden: Supply normal; $2.20 a unit, f.o.b. Coast; 65% $171@173.

Los Angeles: Demand limited; supply ample; trend steady; $2.15 a unit.

Cincinnati: Demand fair; trend higher; supply tight; $150@160.

Portland: Demand slow; trend lower; supply ample; $2, f.o.b. Vancouver; $2.15, f.o.b. California.

HAY

Seattle: Demand fair; trend firm; supply ample; $32 ton, delivered, truck lots for U.S. No. 2 green.

Ft. Worth: Demand fair; supply sufficient; carlots, baled, No. 1 alfalfa $48@50, No. 2 $46@48, Oklahoma origin; prairie $37@39; Johnson grass, nominal, No. 2 $36@38, delivered TCP.

Wichita: Demand fair; supply adequate; prairie $20@25, alfalfa $25@30.

Louisville: Demand fair; trend steady; supply ample; No. 1 timothy, clover or mixed timothy and clover, No. 1 $35 ton, No. 2 $33; local alfalfa No. 1 $38, No. 2 $36; straw $14@15 ton.

New York: Demand and supply fair; trend steady; price situation reported distorted due to trucking in from Canada for direct sales to consumers at prices well below those asked by domestic shippers. 1954 new crop timothy, No. 1 $40@45, No. 2 $34@38, No. 3 $29@32.

St. Louis: Demand fair; supply ample; timothy and clover mixed $30@33.50 ton; clover $26@30 ton; alfalfa, first and second cutting $25 ton; alfalfa, third and fourth cutting $32@35 ton; prairie $35@38 ton; straw $13@14 ton.

Philadelphia: Demand and supply fair; timothy and clover $42@44 as to quality.

Cincinnati: Demand slow; trend adequate; supply adequate; No. 1 timothy, new $26; first cutting No. 1 alfalfa $29; second cutting $33; fancy No. 1 clover and timothy $32; No. 1 red clover $31; bright wheat or oat straw $14@15.

Los Angeles: Demand moderate; trend steady; supply ample; U.S. No. 1 $35@36; U.S. No. 2 leafy $32@34; U.S. No. 2 green $32@34; U.S. No. 2 $29@30.50.

Ogden: Supply normal; $1.20 bale; $20@25 ton in the barn.

Boston: Demand and supply steady; No. 2 timothy $38@40; second cutting alfalfa $53@55.

HOMINY FEED

Boston: Demand active; supply scarce; $67.50, nominal.

Kansas City: Demand fair; offerings moderate; trend slightly stronger at $56.50, sacked, Kansas City.

Memphis: Demand fair; trend steady; supply ample; white $60, yellow $63.

Indianapolis: Demand light; trend unsettled; supply sufficient; yellow $58 ton including state tags and used bags; white $59 ton, ground corn $61 ton.

Milwaukee: Demand and supply fair; $56@57.

Louisville: Demand fair; trend easy; supply ample; $59.40 ton.

Seattle: Demand fair; trend steady; supply ample; $70 ton, delivered, sacked.

Chicago: Demand fair; supply good; $56.80.

Cincinnati: Demand poor; trend steady; supply adequate; $59@60.

LINSEED OIL MEAL

Boston: Demand slow; supply spotty; $85.45.

Kansas City: Offerings adequate; demand limited; trend higher; $65@65.50, bulk, Minneapolis.

Los Angeles: Demand fair; trend stronger; supply ample; $70.

Chicago: Higher prices appeared in the central states during the week ending Nov. 3, and trading increased. There was improved demand from feed manufacturers. Quotations Nov. 3: solvent $76.50, expeller $80.

Minneapolis: Buying has slowed some, but crushers report good directions and some fair inquiry and day-to-day sales. Prices are steady. Solvent meal is quoted at $65.50, bulk, Minneapolis; 22% flaxseed screenings oil feed $41, bulk, Minneapolis.

San Francisco: Demand and supply fair; $72.

Indianapolis: Demand and supply fair; trend upward; new process $82, old process $84.

Milwaukee: Demand and supply fair; 34% $80, 36% $75.

Seattle: Demand steady; trend firm; supply sufficient; 34% Montana expeller $92 ton, delivered, carlots; domestic 30% expeller $86 ton, ex-dock.

Ft. Worth: Demand dull; supply sufficient; carlots, 34% expeller $56.82, delivered Ft. Worth, November shipment; pellets $2.25 premium.

Wichita: Demand slow; supply sufficient; 34% $83.

Louisville: Demand slow; trend strong; supply normal; new process $81.35; old process $86.95.

Philadelphia: Demand and supply fair; 34% $85.50.

Portland: Demand good; trend higher; supply ample; $70, Los Angeles.

Cincinnati: Demand fair; trend strong; supply tight; $80@86.

MALT SPROUTS

Boston: Demand poor; supply light; $62.

Milwaukee: Demand and supply fair; $51@52.

St. Louis: Demand good; supply adequate; No. 1 bulk $45.50@46 ton; No. 1 sacked $51 ton; No. 2 sacked $43.50@44 ton.

Chicago: Demand and supply fair; No. 1 $52.

Cincinnati: Demand fair; trend steady; supply adequate; No. 1 $56.50@57.50.

MEAT SCRAPS

Portland: Demand good; supply ample; trend higher; $190.

Cincinnati: Demand fair; trend steady; supply adequate; 50% $82@85 ton, sacked, f.o.b. Cincinnati.

St. Paul: Packers raised their prices this week, with some improvement in demand noted. Quotations: 50% meat and bone scraps $92.

Seattle: Demand good; trend firm; supply limited; $92.50 ton, ex-warehouse, truck lots.

Milwaukee: Demand slow; supply heavy; 50% $85.

New York: Demand fair; trend steady; supply sufficient; 50% $77.50, 55% $84, sacked; 50% $75, 55% $82.50, bulk.

St. Louis: Demand fair; supply ample; 50% $85@95 ton bulk, $89@99 in paper bags, $90@100 in burlap bags.

San Francisco: Demand fair; supply ample; $1.80 a unit of protein.

Louisville: Demand poor; trend weak; supply good; $90@95 ton.

Wichita: Demand fair; supply adequate; 50% $87.50, f.o.b. plant; 55%, no quotations, no offerings.

Chicago: Demand slow; supply ample; 50% protein $80@92.50; 55% $100.

Ft. Worth: Demand fair; supply sufficient; meat and bone, 50% $81@84, sacked, f.o.b. or delivered Ft. Worth.

Kansas City: Market jumps back to $95, sacked, Kansas City, for 50% meat and bone scraps with demand fair to good and offerings fairly adequate.

Los Angeles: Demand good; trend unchanged; supply adequate; $2 a unit.

Boston: Demand slow; supply good; $1.30 a protein unit; converted, 50% $77.50.

MILLET

St. Louis: Demand fair to good; supply ample; recleaned Early Fortune $3.90 cwt., sacked; recleaned White Proso $4.75@5 cwt., sacked.

MILLFEED

Minneapolis: Prices moved up about $2 ton on bran and middlings and $1 on heavier types, with recent reductions in production accounting for the advance. Demand continues fair, with buyers resisting the new price levels. Quotations: bran $44.50@45, standard midds. $44.50@45, flour midds. $50, red dog $53.50@54.50.

Kansas City: Millfeed has finally taken a spurt in value with limited offerings the main factor as demand is mostly for nearby shipment. Trend continues strong; bran $42.25@42.75 and shorts $46.75@46.25, sacked, Kansas City.

Wichita: Demand good, mostly local; supply insufficient; basis Kansas City, Nov. 3: bran $41.25@41.75, shorts $45.50@46; bran advanced $2.75 ton and shorts $1.75 ton, compared with the preceding week.

Ft. Worth: Demand fair; supply sufficient; carlots, prompt, wheat bran $47.50@48.50, gray shorts $53@54, delivered TCP; $1.50 higher on both bran and shorts, compared with a week previous.

Chicago: The trading pace accelerated during the week ending Nov. 3, and prices advanced. A heavier demand from feed manufacturers, who apparently had let inventories run low, accounted for the upturn. Quotations Nov. 3: bran $45.50@46.50, standard midds. $47.50@48, flour midds. $55@55.50, red dog $57.50@59.

Milwaukee: Demand fair; supply tight; pure bran $49@49.50, standard midds. $46.50.

St. Louis: Supplies scarce and prices strong; bran $46.25@46.75, shorts $50@50.50, St. Louis switching limits.

Cincinnati: Demand and supply fair; trend higher; bran $48@50, middlings $52@53.

Indianapolis: Demand improving; trend steady to higher; supply good; soft winter bran $50.50, standard midds. $53, mixed feed $52, gray shorts $56.

Louisville: Demand good; trend strong; supply fair; bran $51.15, mixed feed $53.65, shorts $55.15, standard midds. $54.35.

Boston: Demand improving; supply irregular; bran $52.50; middlings $55.50.

New York: Demand fair to moderate; trend higher; supply sufficient; bran $53.50@54, standard midds. $54.50@55.

Philadelphia: Demand spotty; supply ample; bran $52.50, standard midds. $54.50, red dog $64.

Memphis: Demand good; trend higher; supply ample; wheat bran $47.50, gray shorts $53, standard midds. $52.

Seattle: Demand steady; trend firm; supply good; $44 ton, delivered common transit points, carlots.

Portland: Demand good; supply ample; trend unchanged; $43.

San Francisco: Demand and supply fair; $50; red bran $55.50.

Los Angeles: Demand fair; trend steady; supply ample; mill run, local $52; red bran, Kansas, delivered CCP $58@58.50.

Ogden: Supply normal; Utah and Idaho red bran and mill run $44, middlings $49; to Denver: red bran and mill run $51, middlings $56; to California: red bran and mill run $51.50, middlings $56.50, f.o.b. San Francisco and Los Angeles.

MINERAL FEED

Ft. Worth: Demand fair; supply ample; all purpose granules $85, block $95; mineral phosphorus 6%, granules $98, block $108; cattle-sheep mineral, 7% phosphorus, granules $95, block $104; hog mineral, phosphorus 3½%, granules $86, phosphorus 2% $50. (All in 50-lb. papers, f.o.b. Ft. Worth.)

Indianapolis: Demand fair; trend firm; supply sufficient; mineral feed with iodine $51, in 5-ton lots $49, in 10-ton lots $48, f.o.b. Indianapolis.

Sioux City: 50-lb. mineral blocks, 8.2% phosphorus $92; 7.5% phenothiazine sheep mineral blocks $4 each.

San Francisco: Demand steady; supply good; all-purpose with iodine $70.

Wichita: Demand good; supply adequate; all-purpose with iodine, 50-lb. blocks $91.50, 100-lb. bags $85, f.o.b. plant.

Seattle: Demand steady; supply ample; trend unchanged; high phosphorus mixtures $54 ton; competitive brands $38 ton.

Portland: Demand good; supply ample; trend unchanged; $42.

MOLASSES

Seattle: Demand steady; supply good; trend unchanged; $19 ton, f.o.b. Seattle, tank carlots.

Ft. Worth: Demand fair; supply ample; blackstrap 10¾¢ gal., f.o.b. Houston; carlots, delivered Ft. Worth $28.09, by truck $26, seller's market price on date of shipment; maximum 11¼¢ November-December.

Louisville: Demand fair; trend steady; supply ample; 10¼¢ gal., tank car lots, f.o.b. Gulf ports.

Minneapolis: Market steady to easier, 10@10¼¢ gal., f.o.b. New Orleans; $19 ton, West Coast.

Beaumont, Texas: Demand good; trend steady; blackstrap 10¾¢ gal., tank cars and tank wagons, f.o.b. Beaumont.

New York: Demand steady; trend firm, supply adequate; blackstrap 12¢ gal. in tank cars, tank wagons.

Indianapolis: Demand fair; trend steady; supply ample; 55-gal. drum $16.95; bulk, 55-gal. drum $13.25, ton $29, barrels extra.

San Francisco: Demand and supply good; $19 ton, f.o.b. cars, Richmond, Cal.

Memphis: Demand good; trend steady; supply adequate; blackstrap 10¼¢ gal., tank car, f.o.b. New Orleans.

Milwaukee: Demand and supply fair; blackstrap 10¼¢ gal.

Portland: Demand good; supply ample; trend unchanged; $19.

Cincinnati: Demand fair; trend steady; supply adequate; 10@10¼¢ gal., New Orleans.

Kansas City: For November shipment the market continues generally 10@10¼¢ gal., New Orleans; demand good.

Los Angeles: Demand fair; trend steady; supply ample; $19, f.o.b. tank cars, Los Angeles harbor; $19.25, f.o.b. tank trucks, Los Angeles harbor.

Boston: Demand fair; supply good; 12¢ gal., in tank cars.

NIACIN

New York: Trend steady; $9 kilo bulk, freight allowed to destination; $9.10 kilo, 10 kilo lots; $9.20 kilo, 5 kilo lots; $9.30 kilo, 1 kilo lot.

OAT PRODUCTS

Los Angeles: Demand good; trend steady; supply ample; pulverized white $72.50.

Philadelphia: Demand fair; supply fair except light on Canadian oat feed; pulverized white oats $58.50; Canadian oat feed $25.50, nominal; domestic $23.

Cincinnati: Demand and supply fair; trend steady; reground oats $21@22; pulverized white oats $53@56; rolled oats $102@106.

Minneapolis: Demand is slow to fair, with prices up on the basis of a stronger oat market. Quotations: poultry rolled oats $99@101, standard pulverized $53, feeding oatmeal $59@90, reground oat feed $16@17.

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TERMINAL ELEVATORS:
Kansas City, St. Louis, Chicago, Buffalo, Omaha, Toledo, Columbus, Fort Worth, Portland, Galveston, Enid, Minneapolis, Norfolk, Nashville, Louisville, Memphis, Houston

Indianapolis: Demand good; trend steady to higher; supply sufficient; pulverized white oats $57.50, pulverized mixed oats $50, crimped white oats $76, fine ground oatmeal $96, rolled white oats $105, No. 2 white oats $1.10 bu., sacks extra.

Memphis: Demand fair; trend steady; supply ample; 3½% protein, reground oat feed $21.10.

St. Louis: Demand fair; supply ample; reground oat feed $17 in 100-lb. burlap bags; pulverized white oats $51 ton, choice $52.

Milwaukee: Demand and supply fair; pulverized, white $48, feed $47; molasses oat feed $35; regrounds, 3% $15, 5% $17.

Portland: Demand good; trend higher; supply ample; rolled $70, ground $65, cleaned $70.

Louisville: Demand fair; trend steady; supply ample; reground $21.35 ton; rolled oats $102.35; feeding oatmeal $92.35; pulverized white oats $56.35; crimped white oats $76.35.

Seattle: Demand and trend steady; supply good; feed oats $68 ton, ground oats $69 ton, rolled oats $71.50 ton, all ex-warehouse, l.c.l.

Chicago: Demand slow; supply plentiful; reground oat feed $15.50; fine ground feeding oatmeal $87.50; feeding rolled oats $100@102.

Boston: Demand slow; supply good; white pulverized $54.50; reground oat feed $21.

OYSTER SHELL

Los Angeles: Demand fair; trend steady; supply ample; local $18.60, eastern $25.

Boston: Demand and supply steady; in paper $21.44.

Seattle: Demand steady; supply good; trend unchanged; eastern $32 ton, western $28 ton, both ex-warehouse, l.c.l.

Louisville: Demand good; trend steady; supply ample; $19.39 ton.

Portland: Demand good; supply ample; trend unchanged; western $29, eastern $34, granite and crystal grits, both $26.

San Francisco: Demand fair; supply ample; local $15, eastern $24.

PEAT MOSS

Philadelphia: Demand fair; supply light; $2.65, f.o.b. pier.

New York: Demand good; trend unsteady; supply limited; German and Canadian peat moss expected to advance 15@20¢ around the first of the year. Holland $2.75 @2.76, German $2.70, ex-dock New York; Canadian $3.35 bale in carlots.

San Francisco: Demand fair; supply ample; $3.15 bale.

Boston: Demand steady; supply adequate; carlots $2.65@2.75 bale; l.c.l. $2.85@3.10.

Los Angeles: Demand fair; trend steady; supply ample; German ex-dock $3.10 in 1,000 bales, $3.25 in 100 bales.

Chicago: Demand good; supply scarce; $3.60@3.75 standard 7⅞ cu. ft. bale.

PEANUT OIL MEAL

Milwaukee: Demand and supply fair; 26% $55, 45% $85.

POTASSIUM IODIDE, U.S.P.

St. Louis: Demand fair; supply adequate; 100% pure potassium iodide U.S.P., 250 lb. average in drums $1.90, 100 lb. lots in fiber drums $1.92, 25 lb. lots in drums $1.95, 5 lb. bottles $2.11, 1 lb. bottles $2.32; 90% potassium iodide calcium stearate mixture, 225 lb. lots in leverpak drums $1.81, 200 lb. fiber drums $1.81, 100 lb. lots in fiber drums $1.82.

New York: Trend steady; straight KI U.S.P. $2.15 lb.; 90% in calcium stearate mixture $2.06 lb.

RICE BY-PRODUCTS

Los Angeles: Demand fair; trend steady; supply ample; bran $42.50, f.o.b. San Francisco; hulls $15.50, f.o.b. San Francisco.

Memphis: Demand good; trend higher; supply limited; bran $41, sacked, f.o.b. Arkansas points.

San Francisco: Demand good; supply fair; bran $52, polish $58.

Ft. Worth: Demand improving; supply very scarce; carlots, rice bran $36@37, November, f.o.b. south Texas rice mills; hulls $2.50@3, f.o.b. mills.

RIBOFLAVIN

New York: Trend steady; feed grade (in feed supplements) 6¢ per gm., freight allowed.

SCREENINGS

Minneapolis: Canadian offerings advanced $2 ton this week, the result of relatively limited supply. Demand has improved for all types, and domestics also advanced. Some major buying for future delivery developed. Quotations: country run $28@32, lights $18@26, mediums $25@30, heavies $35@40, Canadian $30, bulk, Duluth; Canadian ground $39, sacked Duluth.

Cincinnati: Demand good; trend strong; supply fair; Canadian $36@38, barley $33, both bulk, delivered.

Chicago: Demand slow; supply fair; ground grain screenings $37.50@38; Canadian, bulk $31@31.50.

SOFT PHOSPHATE WITH COLLOIDAL CLAY

Chicago: $22, carlots.
Kansas City: $21.50@22, carlots.
St. Louis: $21.10@21.50, carlots.
Des Moines: $22.25@22.50, carlots.
Philadelphia: $21.25@21.50, carlots.
Minneapolis: $22.75, carlots.

SORGHUMS

Los Angeles: Demand fair; trend steady; supply ample; No. 2 milo, delivered CCP $2.95@3 cwt; No. 2 milo, Arizona 25¢ rate, prompt $2.75% cwt.

Cincinnati: Demand and supply fair; trend steady; $2.90@2.95.

Ft. Worth: Demand fair; supply sufficient; carlots, bulk, No. 2 yellow milo $2.55@2.60, delivered TCP.

SOYBEAN OIL MEAL

Philadelphia: Demand spotty; supply ample; $66, bulk, Decatur.

Cincinnati: Demand fair; trend higher; supply adequate; $68@69, bulk, Decatur.

Ft. Worth: Demand very limited; supply sufficient; carlots, 44% $86@87, November-December, delivered Ft. Worth.

Portland: Demand slow; trend higher; supply ample; November-December $65, January $66.

Indianapolis: Demand fair; trend steady to higher; supply sufficient; $79.50 ton, sacks included.

Minneapolis: Although demand was rather light, prices moved up $1.50@2.50 ton this week, reflecting further advances in soybeans. Quotations: $64@65, bulk, Decatur.

Chicago: Soybean oil meal moved slightly higher during the week ending Nov. 3, pushed by a better demand, especially for nearby supplies. The futures markets were strong, giving additional impetus to the upward movement. Quotations Nov. 3: 44% protein, unrestricted $78@79.

Decatur: Demand and supply fair; 44% bulk, unrestricted $67.50@68.

Wichita: Demand fair; supply sufficient; 44% $82, f.o.b. Wichita.

Louisville: Demand fair; trend strong; supply ample; $81.31 ton.

Seattle: Demand steady; trend firm; supply ample; $97.50 ton, delivered, sacked, carlots.

Ogden: Supply normal; $110@115.

Kansas City: Strength continues to persist in meal and this week the market for Kansas City and West is $66@66.50, bulk, Decatur, with $3 premium for unrestricted shipment.

Boston: Demand good; supply plentiful; $67, f.o.b. Decatur.

Los Angeles: Demand good; trend steady; supply ample; $96.07@96.57, delivered CCP.

Milwaukee: Demand and supply fair; 41% $80, 44% $78.

Memphis: Demand slow; trend higher; supply plenty; prime 44% solvent $75 sacked, f.o.b. Memphis.

San Francisco: Demand fair; supply ample; $92.57.

SUNFLOWER SEED

St. Louis: Demand fair; supply ample; large black and gray $16 cwt.; medium black and gray $14 cwt.; small black $8 cwt.

SUNFLOWER SEED MEAL

TANKAGE

Cincinnati: Demand and supply fair; trend steady; 70% digester $85@87.

Los Angeles: Demand slow; trend steady; supply ample; $1.80.

Kansas City: Demand fair to good; offerings adequate; $105, sacked, Kansas City, for 60% digester.

Chicago: Demand slow; supply ample; 60% protein $93@102.50.

Ft. Worth: Demand good; supply adequate; 60% digester $95@98.

Wichita: Demand fair; supply adequate; 60% $100, f.o.b. plant.

Louisville: Demand slow; trend weak; supply good; $90@95 ton.

St. Louis: Demand fair; supply ample; 60% $100@105 ton bulk, $104@109 in paper bags, $105@110 in burlap.

Milwaukee: Demand slow; supply heavy; 60% $97.50.

St. Paul: Market up $2; demand improved; 60% digester $94.

WHEAT GERM MEAL

Chicago: The downtrend continued, with prices off $4 this week to $72.

COTTONSEED OIL MEAL FUTURES

Closing prices of cottonseed oil meal (41% protein) on the Memphis Merchants Exchange in dollars per ton (bulk):

	Oct. 29	Nov. 1	Nov. 3	Nov. 4
December	....@ 66.40	67.20@ 67.25	66.00@ 67.00	....@ 66.75
January	66.50@ 67.50	67.25@ 67.50	66.75@ 67.50	....@ 67.00
March	68.25@ 68.50	68.25@ 69.25	67.00@ 68.50	67.00@ 68.00
May	68.25@ 68.60	69.00@ 69.25	67.25@ 69.00	67.25@ 69.00
July	68.25@ 69.25	69.25@ 69.50	67.25@ 69.50	67.25@ 69.50

SOYBEAN OIL MEAL FUTURES

Closing prices of soybean oil meal (basis Decatur, Ill.) on the Chicago Board of Trade and on the Memphis Merchants Exchange, in dollars per ton (bulk basis):

CHICAGO

	Oct. 29	Nov. 1	Nov. 3	Nov. 4
November	66.75@ 67.00	67.00@ 68.00	67.25@ 67.75	66.50@ 67.00
December	....@ 67.50	....@ 68.65	....@ 68.80	....@ 68.30
January	67.75@ 67.90	....@ 68.75	....@ 69.00	....@ 68.65
March	68.20@ 68.50	69.00@ 69.25	69.45@ 69.50	....@ 69.25
May	69.00@ 69.40	69.90@ 70.00	70.15@ 70.25	69.75@ 70.25

MEMPHIS

	Oct. 29	Nov. 1	Nov. 3	Nov. 4
December	66.00@ 66.50	67.00@ 67.75	67.25@ 67.45	66.75@ 67.50
January	66.00@ 67.00	67.00@ 67.75	67.25@ 68.55	67.00@ 67.85
March	67.00@ 67.60	67.50@ 68.50	67.75@ 68.75	67.50@ 68.25
May	67.75@ 68.25	68.00@ 69.00	68.50@ 69.50	68.25@ 69.25
July	67.50@ 68.50	68.00@ 69.25	68.50@ 69.50	68.25@ 69.25

USDA Reports 2% Decline in Farm Prices

WASHINGTON — Average prices received by farmers showed another dip in the month ended Oct. 15, according to the U.S. Department of Agriculture. Mid-October prices were down 2% from a month earlier.

Lower prices for hogs, corn, cattle and certain other commodities brought the over-all decline, offsetting increases for milk and certain other commodities.

The Oct. 15 index of prices received by farmers was 242% of the 1910-14 base, compared with 246% a month earlier and 249% a year earlier.

Meanwhile, farmers' production and living expenses declined slightly, being down .3% in the month ended Oct. 15. The dip, USDA said, was caused chiefly by lower feed and labor costs.

With the price changes, farmers in mid-October were receiving an average of 87% of parity for their products, compared with 88% a month earlier. The mid-October ratio was the lowest since 1941.

While corn prices declined, there were slight increases in average prices of wheat, oats and barley. Parity prices were off slightly.

Further slight dips were shown in average prices for eggs, chickens and turkeys.

Following are Oct. 15 parity prices, with comparisons:

	Oct. 15, 1954	Sept. 15, 1954	Oct. 15, 1953
Wheat, bu.	$2.47	$2.43	$2.44
Corn, bu.	1.79	1.80	1.77
Butterfat, lb.	.739	.742	.737
Milk, cwt.	4.69	4.70	4.64
Barley, bu.	1.35	1.36	1.35
Cottonseed, ton	71.10	71.40	71.50
Flaxseed, bu.	4.46	4.43	4.47
Oats, bu.	.868	.871	.875
Rye, bu.	1.69	1.69	1.67
Sorghum grain, cwt.	2.54	2.55	2.67
Soybeans, bu.	2.79	2.80	2.75
Beef cattle, cwt.	20.90	21.00	20.80
Calves, cwt.	23.10	23.20	23.20
Chickens, live, lb.	.296	.297	.304
Eggs, doz.	.463	.465	.474
Hogs, cwt.	20.50	20.60	20.00
Lambs, cwt.	22.80	22.80	22.60
Sheep, cwt.	10.20	10.20	10.40
Turkeys, live, lb.	.374	.375	.378

Following are Oct. 15 average prices received by farmers, with comparisons:

	Oct. 15, 1954	Sept. 15, 1954	Oct. 15, 1953
Wheat, bu.	$2.08	$2.07	$1.94
Rye, bu.	1.20	1.25	1.15
Corn, bu.	1.45	1.53	1.34
Oats, bu.	.731	.711	.727
Barley, bu.	1.08	1.05	1.12
Sorghum grain, cwt.	2.14	2.16	2.19
Hay, baled, ton	22.30	22.00	21.20
Cottonseed, ton	60.20	61.60	52.40
Soybeans, bu.	2.54	2.51	2.41
Flaxseed, bu.	3.05	3.04	3.51
Hogs, cwt.	18.40	19.70	21.30
Beef cattle, cwt.	15.80	16.10	14.60
Calves, cwt.	16.00	15.80	13.80
Lambs, cwt.	17.60	17.80	16.60
Butterfat, in cream, lb.	.569	.558	.657
Milk, wholesale, cwt.	4.33	4.12	4.61
Chickens, live, lb.	.175	.192	.234
Turkeys, live, lb.	.271	.275	.333
Eggs, doz.	.324	.338	.532

Protein Meal Futures Climb at Memphis

MEMPHIS, TENN. — Protein oil meal futures pushed higher on the Memphis Board of Trade last week with soybean oil meal advancing as much as $4 ton and not below $2.50 ton anywhere across the board.

Cottonseed oil meal also firmed, with price advances ranging from 85¢ to $1.75 ton.

A feature of soybean meal futures was the progressively diminishing premium of the deferred positions over December, reflecting the improved demand for cash meal in the nearby position.

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AFMA SURVEY OF FEED SUPPLIES

(Continued from page 1)

of animal and poultry numbers and production:

Swine—The 1954 fall pig crop is estimated to be 35,389,000 head, which is 11% more than the pig crop of the preceding fall (1953).

It is estimated that 58,309,000 pigs will be produced in the spring of 1955, which is approximately 4% more than was produced in the spring of 1954 (56,066,000).

Due to special emphasis on producing leaner type hogs, it is expected that the average slaughter weight of all hogs marketed in the 1954-55 feeding year will be 234 lb., which is 4 lb. lighter than in 1953-54.

Poultry—The size of the nation's laying flocks will remain large during the 1954-55 feeding year. There will be a decline in the number of chickens raised for flock replacement in 1955; a sizable decline in the 1955 turkey crop, and a leveling off of commercial broiler production.

The average number of layers for the period Oct. 1, 1954 to Sept. 30, 1955 is expected to be 356,700,000, which is a little more than 2% above the previous year. Numbers of layers will average 5% over the previous year during the first quarter of the period, but numbers will gradually be reduced, reaching the level of the previous year by July and falling below the 1954 number during the remainder of the period.

The number of chickens raised in 1955, exclusive of commercial broilers, is expected to total 602,200,000, a 3% decline from 1954.

Commercial broiler production in 1955 is expected to be 1,054,000,000, which is 1% above the 1954 estimated production. This represents a leveling off in production within the industry.

Number of turkeys to be raised in 1955 is estimated at 56,773,000, down 7% from the 1954 indicated crop. The proportion of light turkeys is estimated at 30% of the total, the same percentage as the previous year. The number of breeding turkeys is estimated at 3,230,000, down 5% from the previous year.

Dairy cattle—Indications are that there will be a slight increase in cow numbers as compared with 1954. The number of cows to be milked in 1955 is estimated to be 22,750,000, an increase of a little over 1%. The number of heifers to be raised for replacement indicates a decrease of about 5%.

It is estimated that total milk production will be increased both by an increase in cow numbers and an increase in milk yield per cow. Based on these estimates, it is expected that milk production will reach an all time high of about 126 billion pounds.

It appears that feeding rates for milk cows will be 1,700 lb. of concentrates, a little higher than last year. Roughage is plentiful in some sections; however, in drouth areas increased concentrate feeding may be necessary.

Beef cattle—Total beef cattle numbers will be about 3% lower Jan. 1, 1955, than they were a year earlier. Continuing drouth throughout the southern and southwestern states together with unfavorable prices have brought about heavy liquidation of cow herds in some areas.

Increased usage of pasture and harvested roughages with corresponding reduction in concentrates going into beef cattle is a reflection of producers' attempts to keep production costs in line with live cattle prices. These changing management practices are responsible for shifts in numbers of beef cattle classes.

Sheep—A noticeable trend toward establishing and enlarging farm flocks of ewes in some of the native sheep states has been taking place for two years. It was expected that this would cause total numbers of sheep in the country to turn upward a year ago, but liquidation and reduction caused partly by drouth more than offset this and resulted in a decrease.

It is expected that unless drouth or other factors become too severe, the downward movement in sheep numbers will be largely nullified and that for the current year, total numbers will remain nearly at present levels.

Horses and mules—A further reduction in horse and mule numbers of 7% is expected for the 1954-55 feed year. With work stock numbers approaching what appears to be minimum requirements, and with light horses making up a greater percentage of the total, it is estimated that the rate of further declines will be reduced.

Other animals—For the first time, this report included an estimate of feed use by miscellaneous livestock and poultry in cities and towns and unreported animals on farms. This grouping also includes game birds, fur-bearing animals, goats, rabbits, dogs, cats, etc. The feed use by these animals is estimated to be nearly 4 million tons.

In estimating feed supplies, the survey committee pointed out that the 1954 harvest of feed grains was larger than last year. The corn crop was smaller, but the oat, barley and grain sorghums crops were larger. Corn is of excellent quality in the northern Corn Belt. In the South, however, the corn crop was short in some states and more than the usual corn acreage was diverted to forage and silage.

Little change from the year before is indicated for the supplies of wheat millfeeds and other low-protein byproducts for feed in 1954-55. The combined supplies of grains and these by-products available for feed this year are estimated to be about a fifth larger than the amount fed last year.

Protein Supplies

The supplies of oilseed meals, animal proteins, grain proteins and urea, calculated on an oilmeal equivalent basis, for feed this year are estimated to be 14,623,000 tons, about the same as the tonnage fed during 1953-54. The increased soybean meal tonnage more than offset the reduced cottonseed crop. It is to be noted that an estimate of 450,000 tons of oilmeal equivalent of urea (75,000 tons) is included in this year's supply figures. This estimate is based on informal information from the trade.

Supplies of hay and other roughages are about the same as a year earlier but are very short in some areas. The supply of range and pasture feed has been cut by dry weather.

(The estimates of supplies for feed are arrived at after allowing for exports and imports, industrial and other non-feed uses and reasonable carryovers of grains, i.e., 300 million bushels of corn.)

Before any feed supply and use estimates were made by the various sub-committees, the entire survey committee carefully reviewed both government and private estimates and reports of the feed supplies that will likely be available. Then, taking into account the national economic picture, the probable consumer demand for meat, milk and eggs, and the attitudes of farmers throughout the nation, the subcommittees estimated how many birds and animals will be raised of each type of livestock and poultry. Their next estimate dealt with how much each type of animal and bird would be fed. Then, by multiplying the livestock and poultry numbers times consumption, they arrived at the total feed usage. Comparing these figures with the forecasted feed supply, the committee determined the balance that will probably exist during the coming feeding year.

Following is the list of members of the 1954-55 AFMA Feed Survey Committee:

Advisors at large — Dean G. M. Cairns, University of Maryland (chairman of feed survey committee); Dean A. E. Darlow, Oklahoma A & M College; Dean Frank J. Welch, University of Kentucky.

Poultry committee — Prof. F. D. Reed, University of Maine (Chairman); Dr. H. R. Bird, University of Wisconsin; Prof. J. S. Carver, State College of Washington; Prof. D. F. King, Alabama Polytechnic Institute; Prof. T. D. Runnells, University of Delaware; Dr. E. P. Singsen, University of Connecticut.

Dairy Committee—Prof. G. E. Gordon, University of California (chairman); Dr. C. F. Huffman, Michigan State College; Prof. J. P. LaMaster, Clemson Agricultural College; Dr. G. W. Salisbury, University of Illinois.

Swine committee—Dr. W. M. Beeson, Purdue University (chairman); Dr. T. J. Cunha, University of Florida; Dr. L. E. Hanson, University of Minnesota; Prof. W. J. Loeffel, University of Nebraska.

Beef and sheep committee—Dr. J. C. Miller, Texas A & M College (chairman); Dr. R. F. Cox, Kansas State College; Prof. C. C. Culbertson, Iowa State College; Dr. L. E. Washburn, Colorado A & M College.

Agricultural economics committee —Dr. L. C. Cunningham, Cornell University; Dr. L. J. Norton, University of Illinois.

TEXAS PROGRAM SPEAKERS — Featured on the program of the recent Texas nutrition conference at Texas A & M College was this group, left to right: R. F. Van Poucke, Western Condensing Co., Appleton, Wis.; L. W. Carpenter, Distillers Feed Research Council, Cincinnati; W. M. Beeson, Purdue University, Lafayette, Ind., and I. W. Rupel, C. M. Lyman and J. C. Miller, of the Texas A & M College staff. **(See story on page 26.)**

Chicks Placed in Principal Broiler Areas

Chicks Placed (thousands)

State*—	Week ending: Sept. 11	Sept. 18	Sept. 25	Oct. 2	Oct. 9	Oct. 16	Oct. 23	Oct. 30
Maine	633	611	577	630	471	†590	601	609
Connecticut	436	383	385	387	339	386	379	359
Pennsylvania	...	...	...	...	395	420	344	368
Indiana	691	640	615	598	459	420	507	600
Illinois	...	...	...	...	149	138	126	126
Missouri	...	...	...	...	372	419	391	326
Delaware	...	...	...	...	1,023	996	930	898
Maryland	...	...	...	...	865	785	764	877
Virginia	...	...	...	...	573	389	409	676
West Virginia	...	...	...	...	189	192	187	283
North Carolina	...	...	...	...	873	837	890	820
South Carolina	...	...	...	...	177	162	162	172
Georgia	2,717	2,737	2,806	2,752	2,547	2,484	2,546	2,473
Florida	218	200	192	160	193	149	160	175
Alabama	932	794	†905	†965	940	1,049	977	964
Mississippi	736	706	649	660	671	686	708	655
Arkansas	1,591	1,445	1,454	1,435	1,286	1,301	1,372	1,186
Louisiana	...	...	...	...	189	189	170	227
Texas	1,345	1,380	1,466	1,370	1,267	1,292	1,334	1,309
Washington	...	...	...	...	113	109	98	160
Oregon	62	56	56	69	57	66	74	79
California	949	966	930	927	936	905	879	875
Total	...	...	...	...	14,147	14,023	13,906	14,227

COMPARABLE 18 AREA TOTALS**

1954	13,010	12,581	12,537	12,286	11,089	10,971	11,045	11,193
1953	10,990	11,360	11,474	11,041	11,195	11,702	12,432	13,759

*Report started with week ending Oct. 9 for Pennsylvania, Illinois, Missouri, South Carolina, Louisiana and Washington. Report expanded to include entire state for Delaware, Maryland, Virginia, West Virginia and North Carolina.

**Former reporting areas of Maine, Connecticut, Delaware, Shenandoah Valley, Virginia-West Virginia, Central-Western North Carolina, Georgia, Texas, Florida, Alabama, Mississippi, Indiana and California.

†Revised.

PRODUCTION SCHOOL

(Continued from page 1)

tion school dinner will be held on Tuesday evening, Nov. 16. Two constructive sessions are on the program which follows the meal. The first is a skit, "Mr. Sloppy Runs a Feed Mill," and the second is a quiz program, "Dr. I-Pay-Cash," during which contestants will receive prizes for questions based on information out of the production school.

Advance planning and cooperation of the feed school speakers have made it possible to prepare the production school transcripts and the annual examination ahead of schedule this year, Mr. Straube said. He revealed that each student will receive the complete transcript of discussions and the examination questions prior to leaving Kansas City. The examination, an annual feature, is made up of 10 questions from each discussion. Students return the papers with their answers to the Midwest headquarters, qualifying them for a "graduation diploma."

The school chairman also announced that registration will begin at 5 p.m. Sunday, Nov. 14, on the mezzanine of the Hotel President. This desk will be open until 10 p.m. that evening, and on Monday morning registration will be continued at 8 a.m. on the 12th floor of the hotel. The first session begins at 9:30 a.m. Nov. 15.

St. Joseph, Mo., Feed Club to Meet Nov. 16

ST. JOSEPH, MO.—The St. Joseph Feed, Seed, Grain & Fertilizer Club will meet here Nov. 16, Joe Joffe, Dannen Mills, Inc., president, has announced. A steak dinner will be served at Heinies and a floor show will follow.

Wheat Farmer Sues CSS Over Acreage Controls

KANSAS CITY — A suit against the Commodity Stabilization Service of the U.S. Department of Agriculture has been filed in federal district court here by a Jackson County wheat farmer who claims the acreage curtailment program constitutes an illegal and arbitrary seizure of his wheat crop.

Plaintiff is Robert E. Gibson, Independence, Mo., who ignored a 12-acre wheat acreage allotment and planted 28 acres to wheat.

The county ASC committee ruled that Gibson must pay a penalty of $1.12 bu. on the excess quota production, store the wheat or post bond. The review committee upheld the penalty. Members of the county review committee named in the suit are Charles O'Toole, of Nevada, Mo., W. B. McKinley, Hermitage, Mo., and S. J. Roop, Leaton, Mo.

Jones Company Buys Topeka, Kansas, Firm

TOPEKA, KANSAS — The Jones Alfalfa Milling Co. of Topeka has announced the purchase of the Forbes Bros. Central Mills, in Topeka, from the Lauhoff Grain Co., Danville, Ill. E. A. Jones, president, stated that a portion of the newly acquired property will be used for dry storage and the elevator capacity will be adapted for storage of alfalfa under inert gas conditions.

The Jones company produces alfalfa meal from units in Central Kansas and at Litchfield Park, Ariz. Mr. Jones has been in the dehydrating business since 1944. O. G. Murphy, Topeka, is office manager and in charge of sales for the Kansas plants. Lloyd Hoobler is production manager of the Kansas plants. Wayne Sawyer is plant manager and manager of sales for the Arizona units.

In addition to the milling business, Mr. Jones is active as a designer and manufacturer of the Jones mowing bar attachment, widely used in the field harvesting of alfalfa. He revealed this week that a nine-foot adaptation of the mowing bar has been perfected as well as a new self-propelled harvester. These items will be introduced to the alfalfa industry soon.

T. B. Martin F. C. Litterst, Jr.

MANAGERS — Appointed territory managers for Texo feeds by Burrus Feed Mills, Ft. Worth, Texas, are T. B. Martin and F. C. Litterst, Jr. The latter will have the Austin territory, following agricultural teaching experience and cattle breeding. Mr. Martin will cover the northwestern Louisiana area from Shreveport headquarters. He has been an agricultural manager since 1949 after attendance at the University of Texas.

Locations, Capacities Of CCC-Owned Grain Bins Listed

WASHINGTON — A Commodity Stabilization Service official recently provided the Grain & Feed Dealers National Assn. with detailed information showing the locations, numbers and capacities of CCC-owned grain storage facilities.

The information was supplied in answer to a question at the G&FDNA convention in Cincinnati. The association obtained a copy of the detailed information, which is reproduced below:

CCC-Owned Bins
Oct. 1, 1954

State—	No.	Capacity (bu.)
Alabama	23	15,000
California	150	487,500
Colorado	2,189	8,764,400
Georgia	9	7,000
Illinois	39,369	141,683,313
Indiana	9,905	35,383,924
Iowa	57,304	248,198,786
Kansas	13,410	44,589,235
Kentucky	255	829,140
Louisiana	16	8,733
Michigan	1,785	9,087,404
Minnesota	16,914	83,326,555
Missouri	4,795	19,149,968
Montana	1,460	7,626,450
Nebraska	19,752	90,751,887
New Jersey	11	36,800
New Mexico	20	764,000
North Carolina	4	9,000
North Dakota	9,159	43,109,074
Ohio	4,882	16,264,280
Oklahoma	75	747,560
Pennsylvania	39	131,600
South Carolina	155	503,750
South Dakota	17,866	80,616,167
Tennessee	10	176,000
Texas	162	4,550,922
Virginia	70	1,208,550
Wisconsin	1,654	5,893,525
Totals	192,873	$43,890,529

Cincinnati Feed Club Hears "King of Hoboes"

CINCINNATI — Forty members and guests of the Cincinnati Feed Club heard Jeff Davis, "King of the Hoboes," describe some of the activities of his organization, Hoboes of America, at a dinner meeting Nov. 1 in the Hotel Netherland Plaza. A new member, introduced at the meeting, was Kenneth Ernst, Merchants Chemical Co., Inc., Cincinnati, and guests were Edward Henderson, Schenley Distillers, Inc., and James Bowman, Seagram Distillers Corp., both of Lawrenceburg, Ind.

Chairman Edward Cohan announced that the club's annual Christmas party will be held at a time and place to be set by John Young, Schenley Distillers, Inc., arrangements chairman.

LOUISVILLE FIRM REBUILDS

LOUISVILLE—Aubrey & Co., feed manufacturer and jobber, Louisville, which lost its feed mill in a fire last July, has one temporary mill in operation. A second mill will be in operation soon.

Markets

(Continued from page 3)

some plants. Others have caught up on regular business and find even a five day schedule difficult to fill.

Under the emergency feed program 265 080 farmer purchase orders had been issued for 11,815,689 cwt. of approved grains or mixed feed as of Oct. 28. The Secretary of Agriculture on Oct. 29 designated 30 additional counties in Texas, Oklahoma and North Carolina as drouth disaster areas. This brings to 918 the number of counties in 17 states to be listed.

Demand for poultry feed, particularly laying types, was only moderate to fair and much below normal. Broiler feed sales recently have been only on a sustaining basis. Hog feed business has not been as active this week as was experienced in October. A limited amount of regular cattle feed has been sold, but the drouth rations were the main purchases by these feeders.

Unfortunately, costs continued to climb this week with protein ingredients advancing $2@5 ton, millfeed up $2@3 and feed grains barely holding.

Pacific Northwest

The formula feed business continued to slow down in the Pacific Northwest, and resale lots of proteins here and there appeared in the trade at discount prices, a sure sign of either disappointed speculators or of over-estimation of requirements.

Continued heavy liquidation of flocks began to show up in decreased volume of egg laying rations, and the turkey feed business is coming to an abrupt halt as birds go to market. Broiler producers are in difficulty, and the whole picture is one of

AT N. W. MEETING—Dr. R. R. Spitzer, Murphy Products Co., Burlington, Wis., takes the platform at the recent meeting of the Northwest Feed Manufacturers Assn. in Minneapolis. Dr. Spitzer presented "The Greatest Story Never Sold," a message on Americanism. Behind him is C. A. Scott, Merck & Co., Inc., program chairman, who introduced him. (Photo by Truman Fowler.)

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INDEX OF ADVERTISERS

Abbott Laboratories
Aeroglide Corporation 20a
Albemarle Paper Mfg. Co.
Albers Milling Co. 33
Albumina Supply Co. 62
Allied Mills, Inc.
Amburgo Co. 16
American Agricultural Chemical Co. 58
American Cyanamid Co. 42, 43
American Elevator & Grain Division 66
American Mill Service Co., Inc.
Anderson Box Company
Anderson, V. D., Co. 12a
Angle American Mill Corp. 26
Arcady Farms Milling Co. 20
Archer-Daniels-Midland Co.
Arid-Aire Grain Dryers 43a
Arkell & Smiths
Armour & Co.
Aubrey & Co.
Automatic Company 71

Baker, H. J., & Bro. 17
Barker, Moore & Mein Co.
Bartlett, The C. O., & Snow Co. 40a
Bates Grain Co. 16
Baughman Manufacturing Co., Inc.
Baxter, A. E., Engineering Co. 59
Bayou Molasses Co.
Bemis Bro. Bag Co. 21
Berg Bag Co.
Bigelow Sales Co. 75
Black, Sivalls & Bryson, Inc.
Blatchford Calf Meal Co. 44
Blomfield-Swanson
Bonewitz Chemicals, Inc.
Borden Company 12, 13
Bosworth Commission Co.
Bowman Feed Products, Inc. 30
Bradley & Baker 26
Bremco Alfalfa Mills, Inc. 20
Brewers Yeast Council, Inc.
Brower Manufacturing Co. 44a
Bryant Engineering Co. 13a
Burrows Equipment Co. 53a
Burrus Feed Mills
Butler Manufacturing Co.

Calcium Carbonate Co. 24
Calcium Products Co.
California Pellet Mill Co. 11a
Caple, A. B., Co. 52
Cargill, Inc. 15
Champion Portable Mill Co.
Chantland Mfg. Co.
Chase Bag Co. 41
Checkerboard Elevator Co.
Chemical Mfg. Co.
Clark Equipment Co.
Clay, John J., Sales Co., Inc. 14, 58
Cloffne, Herbert K. 26
Colby Milling, Inc. 61
Columbia Phosphate Co. 69
Columbia Quarry Co. 55
Columbian Steel Tank Co.
Combs & Co. 19a
Commercial Solvents Corp. 48, 49
Continental Grain Co. 75
Corn Products Refining Co.
Coronet Phosphate Co. 53
Cosby-Hodges Milling Co. 35
Coshocton Farmers Exchange 76
Covington Machinery & Const. Co. 71
Crete Mills 62
Crippen Manufacturing Co 18a

D. C. A., Inc.
Daffin Manufacturing Co. 67
Dannen Mills, Inc. 28
Dawe's Laboratories, Inc. 52, 80
Dawson County Feed Prod., Inc.
Day Company, The 44a
Dayton Bag & Burlap Co., The 28
Dehydrating Process Co. 30
Delta Phosphate Co.
Des Moines Oat Products Co. 62
Devold, Peder, Oil Co. 61
Diamond V Mills, Inc. 56
Distillation Products Industries 66
Distillers Feed Research Council 25
Dixie Machinery Mfg. Co. 52a
Doane Feed Products Co. 6
Doty Technical Laboratories
Douglas Chemical Co., Vita-Vex Div.
Dow Chemical Co. 40
Dreyer Commission Co. 28
Duplex Mill & Mfg. Co. 29a, 30a
Du Pont de Nemours & Co.

Early & Daniel Co.
Eastman Chemical Products, Inc.
Edwards Milk Products Co. 28
Ehrsam, J. B., & Sons Mfg. Co. 34a
Elk Valley Alfalfa Mills, Inc. 75
Entoleter Division 57a
Eschenheimer, Rudy, Co.
Eshelman, John W., & Sons
Esmueller Co.
Ewing, Ray, Co. 16, 18, 62, 63, 67, 69
Exact Weight Scale Co.
Excelsior Milling Co. 60

Farmer Feeder Co., Inc.
Farmers Friend Mineral Co.
Faultless Milling Co.
Faust, Henry K. 56
Feed Associates, Inc. 50
Feeders Supply & Mfg. Co.
Feedstuffs 18, 54, 59, 61, 63
Fischbein, Dave, Co. 50a
Flambeau Milling Co.
Flavor Corp. of America 3
Food Research Laboratories, Inc.
Forster Mfg. Co. 51a
Fox Co. 27, 52
Fremont Milk Products Co.
Fruen Milling Co. 7
Fulton Bag & Cotton Mills

Gabrielson Feeds
Gainer Mills, Inc.
General Mills, Inc. 55
Godshalk Sheet Metal Fabricators 71
Goodrich, B. F., Chemical Co.
Gorton-Pew Fisheries 76
Grace Chemical Co. 61
Gruendler Crusher & Pulverizer Co. 57a
Gump, B. F., Co. 46a

Hales & Hunter Co. 60
Half Moon Mfg. & Trading Co., Inc. 6a
Hallenbeck Inspection & Testing Lab. 6a
Hallet & Carey Co. 78
Hammond Bag & Paper Co.
Hand, Peter, Foundation
Hardy, H. E., & Co.
Hardy Salt Co.
Harrington, J. J., & Co. 73
Harris-Crane, Inc.
Harshaw Chemical Co.
Hart-Carter Co. 47a
Haugen Dehydrating Co.
Hayes & Stolz Manufacturing Co. 20a
Heim Manufacturing Co. 41a
Herring Sales Co.
Hess, Dr., & Clark, Inc. 60
Heywood & Babb, Inc.
Hiawatha Grain Co. 55
Highway Equipment Co., Inc.
Hilltop Farm Feed Co. 78
Hilltop Laboratories 64
Hoffman-Taff, Inc.
Hogg, N. D., Ltd.
Holt Products Co.
Honeggers' & Co. 58
Howes, S., Co., Inc. 23, 44, 49a
Hubbard Milling Co.
Hubbell, Charles H.
Hudson Pulp & Paper Corp.
Hughes Engineering Co. 55a
Humphreys-Godwin Co.

Ibberson, T. E., Co. 31a
Illinois Soy Products Co.
Indian Jute Mills Assn.
Industrial Molasses Corp. 4
International Minerals & Chem. Corp. 10
International Paper Co., Bagpak Div.
International Salt Co.
Iowa Limestone Co.

J-M Trading Corp.
Jacobson Machine Works 35a
Jensen Mills 58
Jersee Co 57
Jones-Hettelsater Const. Co. 60a
Joseph, I. S., Co., Inc.

Kasco Mills, Inc. 54
Katz, Max, Bag Co. 33
Kees & Company 76
Kellogg, Spencer, & Sons, Inc.
Kent Feeds
Kent, Percy, Bag Co., Inc. 34
Keystone Steel & Wire Co. 56, 57
Kiewit Feed Co. 75
Kindstrom-Schmoll Company
Koelsch, Charles J., Grain Co., Inc.
Kraft Bag Corp.

Laboratory Construction Co. 36a
La Budde Feed & Grain Co. 54
Landby Dehydrating Co. 75
Larvacide Products, Inc.
Lassen Process

Lee, Geo. H., Co. 32
Le Gear, Dr., Medicine Co.
Lima Armature Works, Inc., The 71
Limestone Products Corp. of America 47
Lindfors Chemical Co.
Loncala Phosphate Co.
Longhorn Engineering Co. 45a

McCabe Grain Co., Ltd.
McGehee Company
McMillen Feed Mills 9
Magnus, Mabee & Reynard, Inc.
Mallinckrodt Chemical Works
Maney Bros. Mill & Elev. Co. 4
Markley Laboratories
Martenis, C. J., Grain Co. 70
Martin, Theo. W., & Son
Mayo Shell Corp.
Merck & Co., Inc. 36, 37, 65
Merrithew, Bill, Co.
Metal Katcher Co., Inc. 76
Meyer, O. W., Laboratories
Mid-Continent Grain Co. 68
Midvale Chemical Co.
Milbrew Co.
Miller Alfalfa Co. 10
Miller Manufacturing Co.
Minneapolis Sewing Machine Co. 26a
Minnesota Linseed Oil Co. 26
Minnesota Specialty Co., Inc. 78
Mitchell, Hutchins & Co. 54
Monsanto Chemical Co.
Morris-McAdams Co.
Morton Salt Co.
Mowat, Wilson & Co.
Mullin & Dillon Co. 78
Murphy Products Co.
Myers-Sherman Co. 18a

Nagel, Herman, Co. 56
Natl. Alfalfa Dehydrating & Mfg. Co. 31
National Cottonseed Prod. Assn. 63
National Distillers Products Corp. 16
National Feed Merchandising Council
National Molasses Co.
National Oats Co. 25a
National Renderers Assn.
National Vitamin Products Co.
Nebraska Boiler & Supply Co. 33a
Neff & Fry Co. 18
Nellis Feed Co. 56
Neumond Co. 69
New Century Co., The
New England By-Products Corp. 76
New York Quinine & Chem. Wks., Inc. 34
Nichols Poultry Farm
Nigh, W. H., & Co.
Nitrogen Division
Nootbaar, H. V., & Co.
Nopco Chemical Co. 29, 45
North Am. Trading & Import Co., Inc. 66
North Carolina Granite Corp. 32
North East Feed Mill Co. 78
Norwich Pharmacal Co., The
Norwood Manufacturing Co.
Nutrena Mills, Inc. 15

O. & M. Seed Co., The 57
Omega Machine Co. 60a
Oyster Shell Products Corp. 64

Pabst Brewing Co.
Paper-Calmenson & Co. 15a
Park, Philip R., Inc.
Parks, J. P., Co.
Parrish, N. K. 33
Parrish & Heimbecker
Pay-U Products Company 18
Pay Way Feed Mills, Inc.
Peavey, F. H., & Co. 16
Peerless Equipment Co. 57
Perry, J. Lawrence
Pfizer, Chas., & Co., Inc. 22, 23
Phenix Foods Co.
Phillips, The Thomas, Co. 8
Piehl's Alfalfa Mill 55
Pillsbury Mills, Inc.
Pittsburgh Plate Glass Co.
Pless & Sheahan 62
Potomac Poultry Food 10
Prater Pulverizer Co. 55a
Pratt Food Co.
Precision Products, Inc.
Premier Peat Moss Corp. 33
Prentiss Drug & Chemical Co., Inc. 59
Publicker Industries, Inc. 11
Puritan Manufacturing Co. 58a

Quaker Oats Co.
Quisenberry Mills

Ralston Purina Co.
Randolph, O. W., Co. 17a
Rapids Machinery Co. 50a
Raymond Bag Co., The 24
Red River Alfalfa Co.

Regniers, Emile, Co. (U.S.A.), Inc. 68
Reliance Feed Co.
Reyher Milling Co., The 72
Richardson, James, & Sons 40
Richardson Scale Co. 10a
Richmond Mfg. Co. 20a
Riley Feed Co.
Robinson, I. N., Jr.
Ross Equipment Co.
Ryde & Co. 10

St. Regis Paper Company
Salsbury's, Dr., Laboratories
Sargent & Co.
Scanlan, Ivan, & Co.
Schenley Distillers
Schreiber Mills, Inc.
Schuster Feed Co.
Schutte Pulverizer Co. 43a
Scroggins Grain Co. 40
Sea Pep
Seavey and Flarsheim Brokerage Co.
Security Mills, Inc.
Sedberry, J. B., Inc. 16
Seedburo Equipment Co. 37a
Seidera, Eugene L., Co. 33
Shell Chemical Corporation
Shellbuilder Co. 60
Sievert, C. W., and Associates
Slimo Chemical Corp. 78
Simonsen Mfg. Co. 32
Sinason-Teicher Inter-American Grain Corp. 51
Sioux Metal Products Co. 51
Small, The W. J., Co. 5
Smith, Edward E., & Co.
Smith, George B., Chemical Works, Inc.
Soft Phosphate Research Inst., Inc. 52
Southern Oyster Shell Mfg. Corp. 59
Southwell Grain Corporation 52
Southwest Mill Supply Co.
Specifide, Inc. 10
Spencer Kellogg & Sons, Inc.
Sprout, Waldron & Co., Inc. 16a, 20
Stabilized Vitamins, Inc. 50
Staley, A. E., Mfg. Co. 72
Staley Milling Co.
Standard Brands, Inc. 69
Standard Milling Co.
Standard Molasses Co.
Sterling Paper Co.
Stivers, Theo. 33
Stone Mountain Grit Co. 68, 69
Strong-Scott Mfg. Co. 26a
Sunset Feed & Grain Co., Inc. 67
Superior Feed Co. 10
Swanson, Carroll, Sales Co. 51
Swift & Co. 10
Swift's Hatcheries
Syntha Laboratories 69

T. D. F. Company
Tamms Industries
Thompson-Hayward Chemical Co. 51

Ubiko Milling Co., The
Ultra Life Laboratories, Inc. 67
Union Bag & Paper Corp.
Union Special Machine Co. 36a
United Distributing Co.
United Mineral Products Co. 72
U. S. Industrial Chemicals Co. 55
Universal Grain Corporation 78
Usines Vermylen S. A. Bassrode

Van Camp Sea Food Co., Inc.
Van Dusen Harrington Co. 16
Virginia-Carolina Chemical Corp.
Vitality Mills
Vitamins, Inc. 75
Vita-Vex, Inc.
Vy Lactos Laboratories, Inc.

W-W Grinder Corporation 25a
Wagner Machine & Mill Supply Co. 27a
Wallace & Tiernan Co., Inc. 22a
Walsh Grain Co. 64
Walters & Co.
Ward Feed Co.
Warren-Douglas Chemical Co., Inc.
Warren Feed & Grain Co.
Waterloo Mills Co.
Weller, B. L., Co. 33a
Wells, Ralph, & Co.
Wenger Mixer Co. 38a, 39a
Western Condensing Co. 30, 31
Western Waterproofing Co. 31a
Whitmoyer Laboratories, Inc. 68
Williams, R. R., Mill Supply Co.
Williamson, John W., & Sons 34a
Wilson & Co. 63
Winston Laboratories 72
Wisconsin Alumni Research Foundation
Woods, John J., & Sons 52a

Zeilers' Laboratories 10

readjustment and liquidation. Credit problems continue to give feed men a headache, and there are predictions in the trade that marginal retail dealers, as well as producers, may be forced out of the business, and that only those individuals and businesses which are well-financed will be in business by the time spring rolls around. Opinions in the trade are that the present readjustment is probably healthy in the long run, because credit structures will be more solidly built and only those producers who are most efficient will survive, but the process of adjusting is painful, to say the least.

Dairy feed business will probably improve seasonally from here on, and this will make a better market for millfeed and hay, but feed men do not feel that the dairy farmer is prepared to spend very much of his income on formula feeds. Both millfeed and hay showed some strength during the week, perhaps due to improved dairy inquiry.

Formula feed prices were slightly lower, based primarily on the still ample offerings of off-grade grains, but sharp competition also had a bearing on the downward price revision. While lists held unchanged, field reports stated that most lists could be shaded a dollar or so a ton.

Central States

Formula feed business continued to lag in the central states during the week ending Nov. 3. Some manufacturers cut their running time back to four days a week, and others reduced their staffs to operate at a lower production level for five days.

The villain in the picture remained the feeding ratio. Observers said feeders are reluctant to buy feeds that keep going up in price when their returns on finished animals and poultry are not satisfactory. As one manufacturer said, "It is a question of how long feeders can keep losing money."

Some sources say there is no improvement in the outlook for the remainder of this year. October was well below the same month a year ago. Prices advanced a little more in the last week, resulting from further climbs by soybean meal and corn. Some pastures are available yet, but some slight advance in cattle feed business was reported. Other types dropped off.

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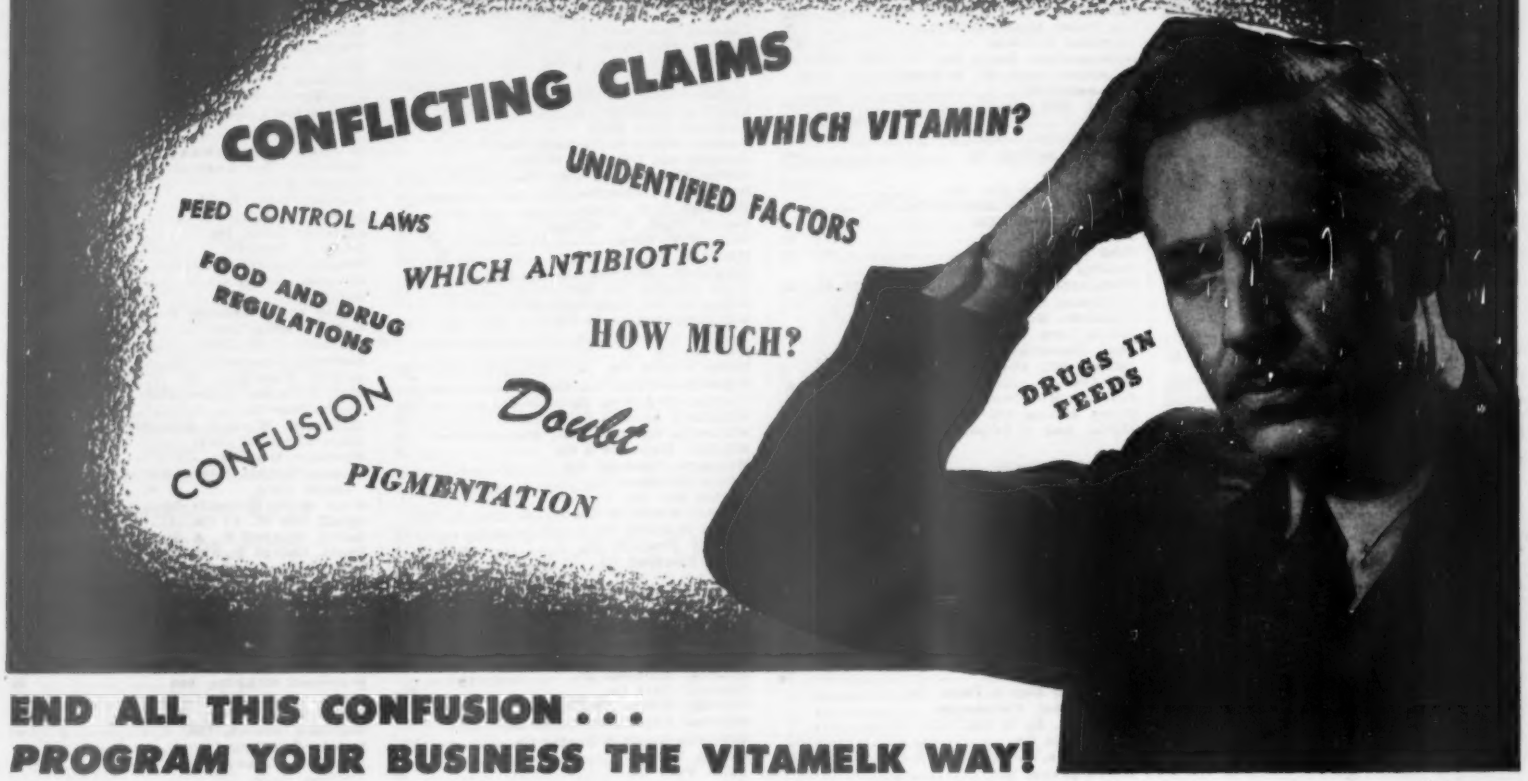

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